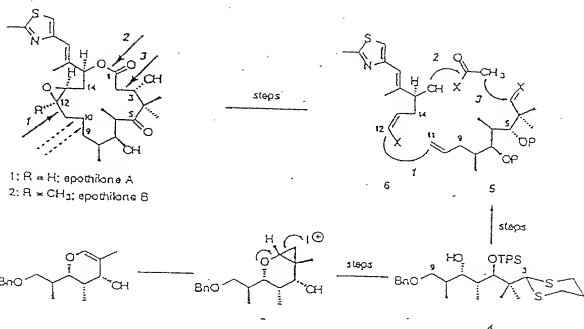


(A)



(B)

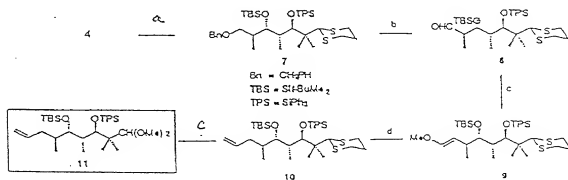


Figure 1

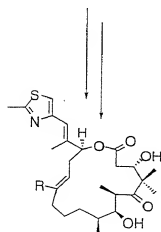
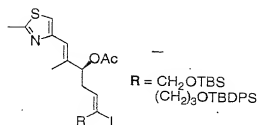
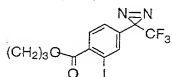
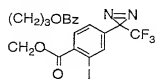
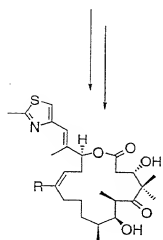
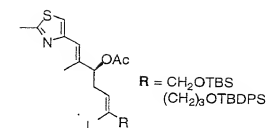


Figure 2

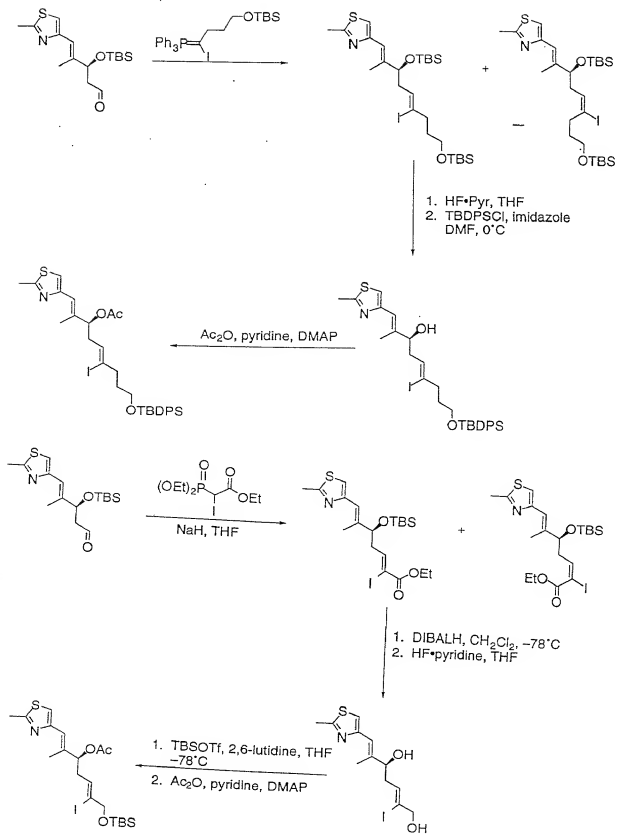


Figure 3(A)

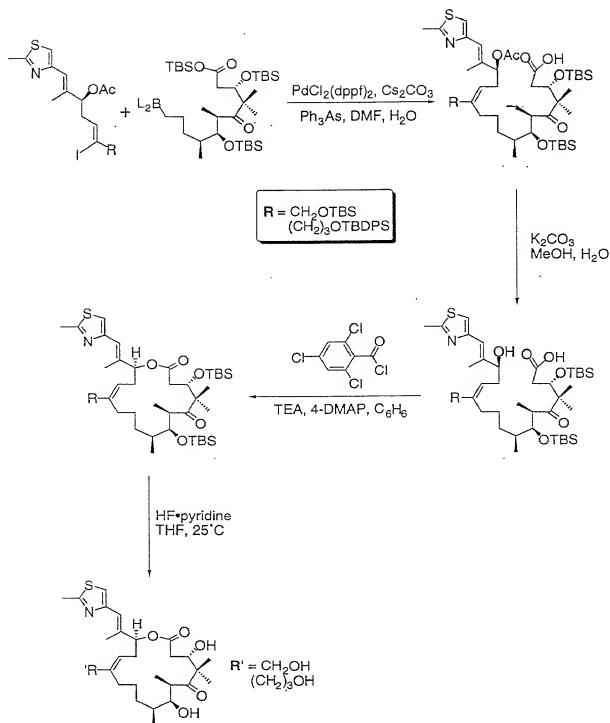


Fig. 3(B)

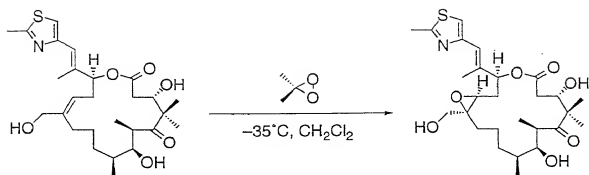
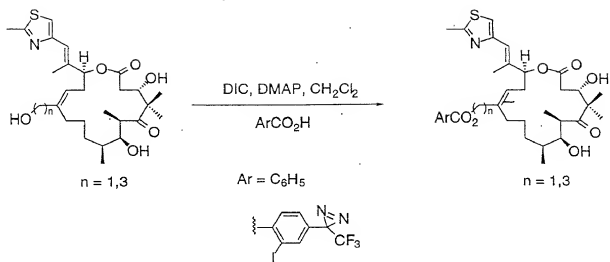


Fig. 3(C)

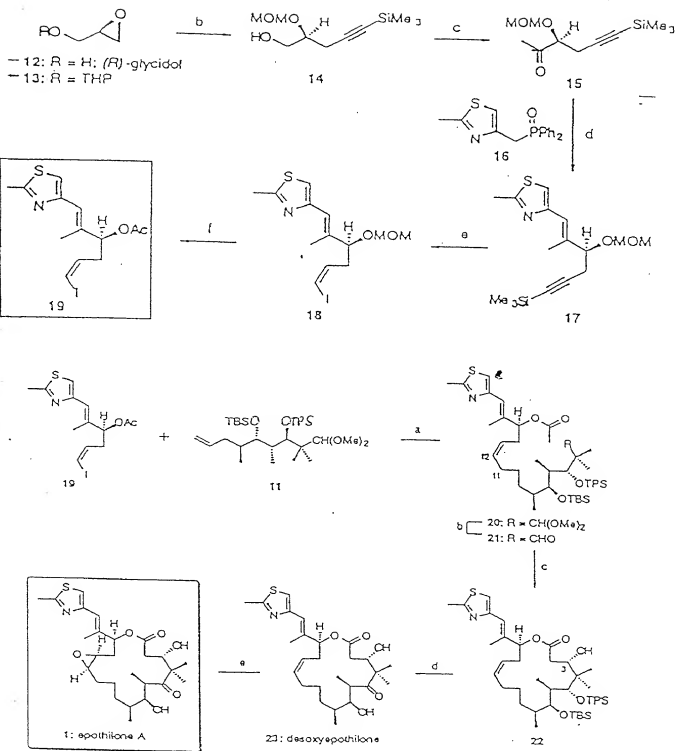


Figure 4

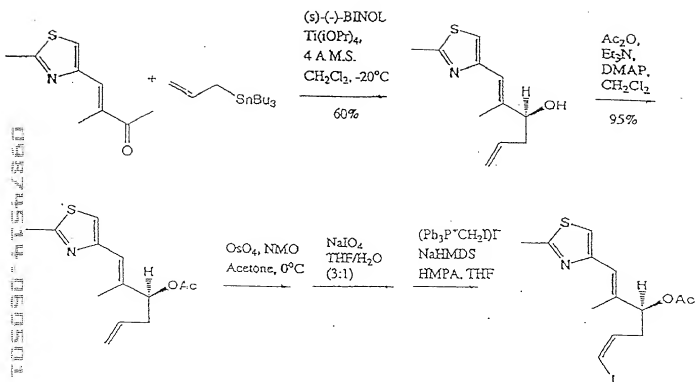
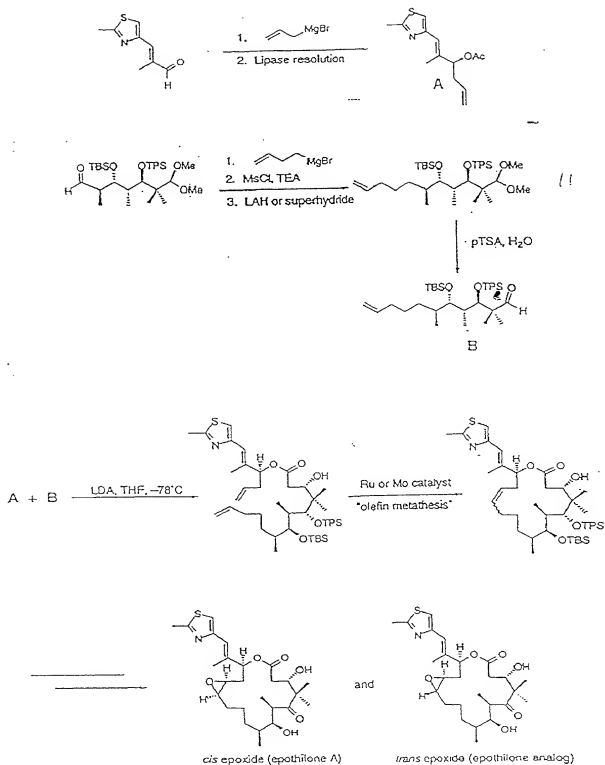
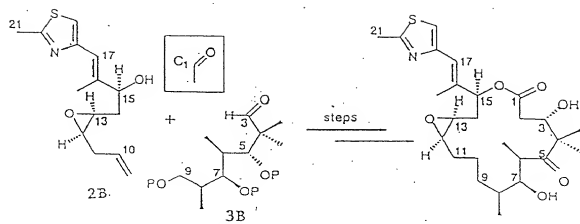


Figure 5



* 17 steps from known starting materials vs. 27 steps for aldol macrocyclization

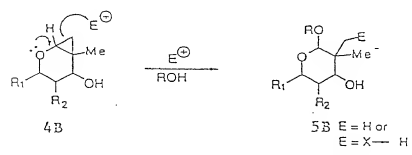
Figure 6



P = unspecified protecting group

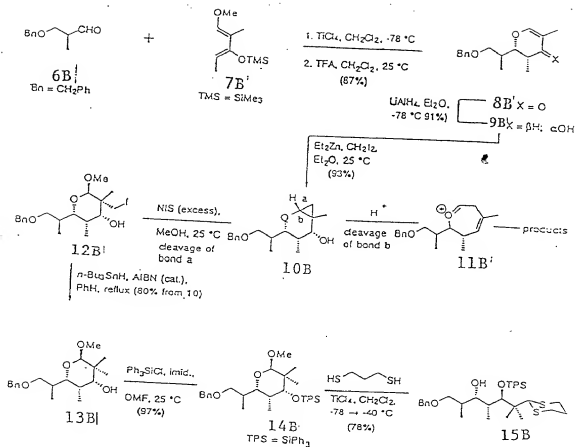
1 : epothilone A

Convergent strategy for a total synthesis of epothilone A (1).



The glycol cyclopropane solvolysis strategy for the introduction of geminal methyl groups.

Figure 7



Enantioselective synthesis of compound 15B

Figure 8

Construction of epothilone model systems **20^B**, **21^B**, and **22^B** by ring-closing olefin metathesis

Figure 9

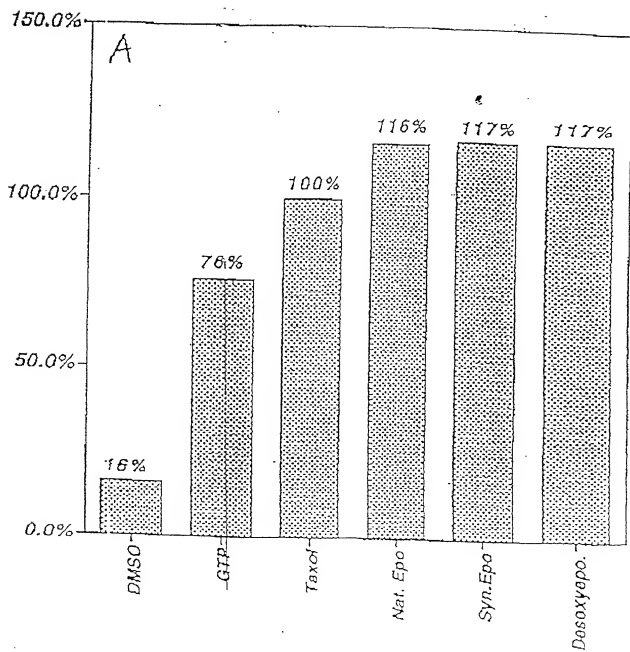


Figure 10

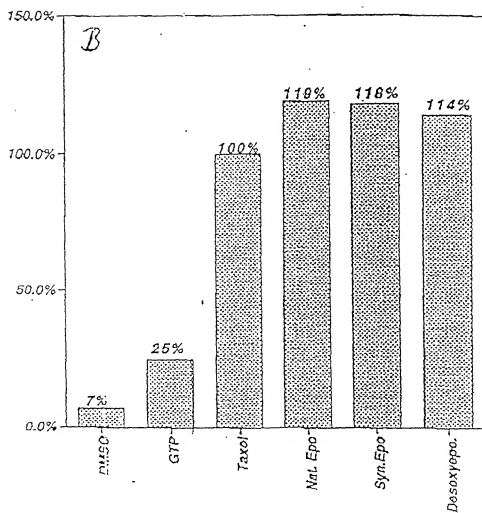


Figure 11

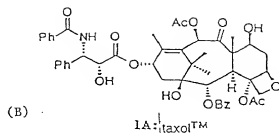
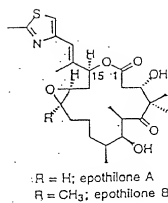


Figure 12

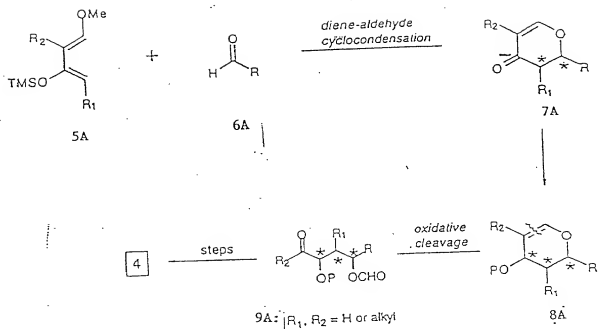


Figure 13

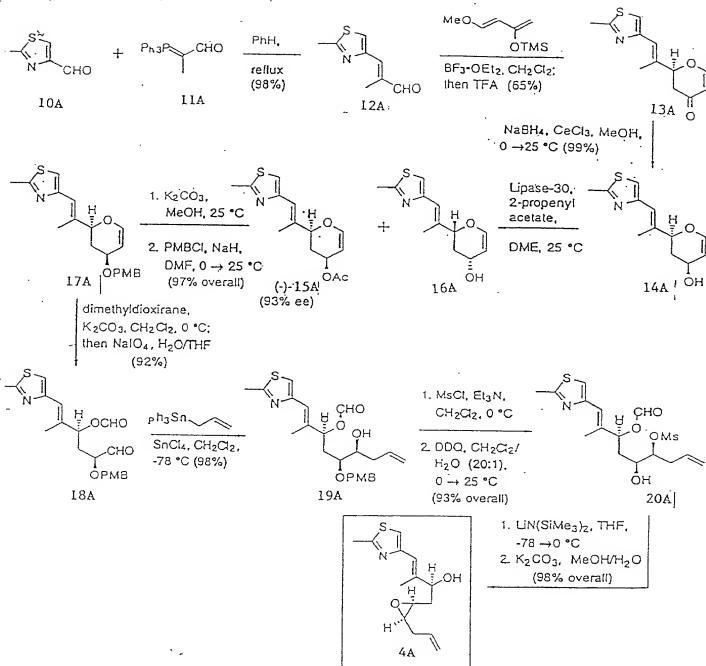


Figure 14

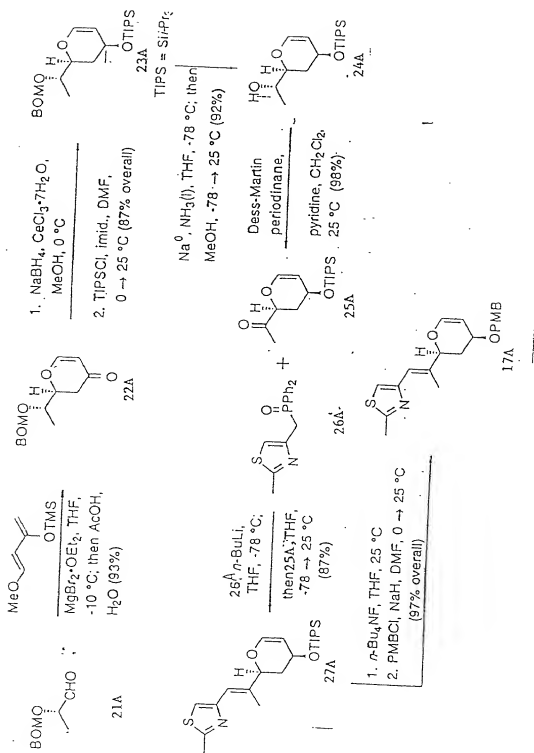


Figure 15

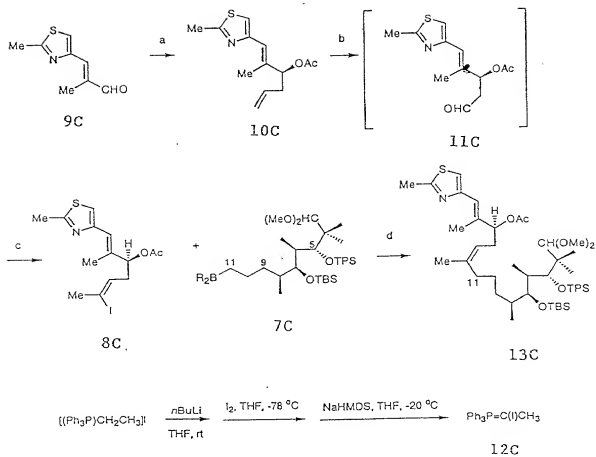


Figure 16

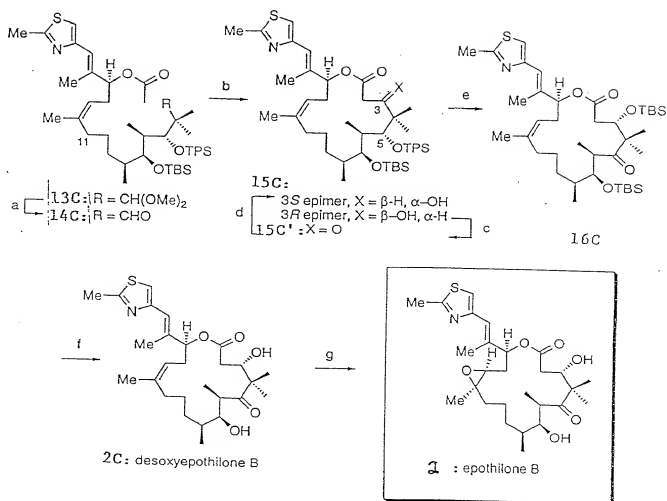


Figure 17

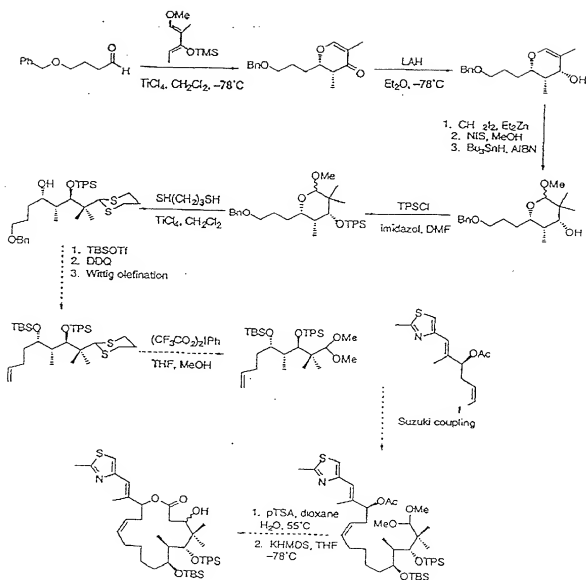


Figure 18

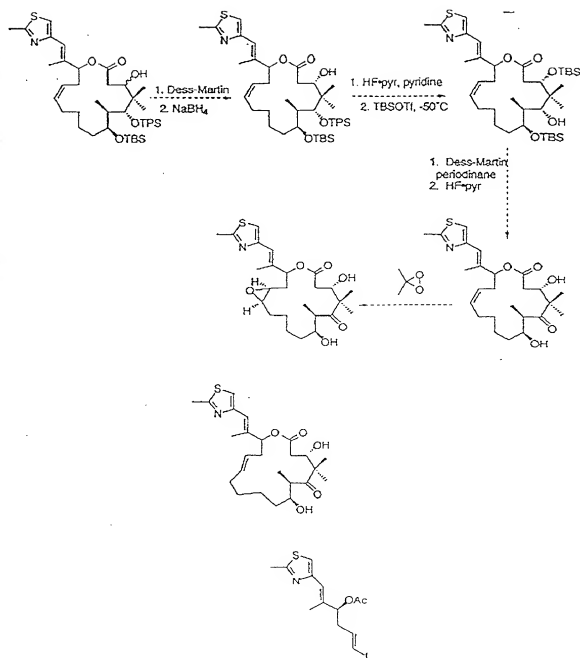


Figure 19

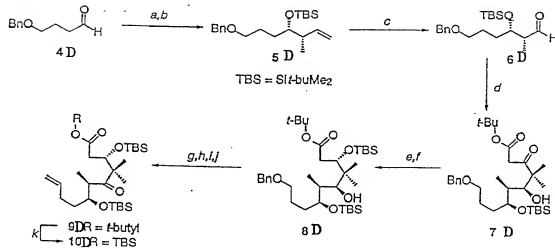
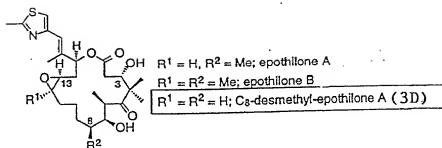


FIGURE 20

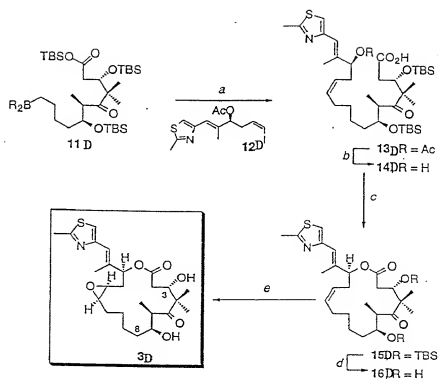


FIGURE 21

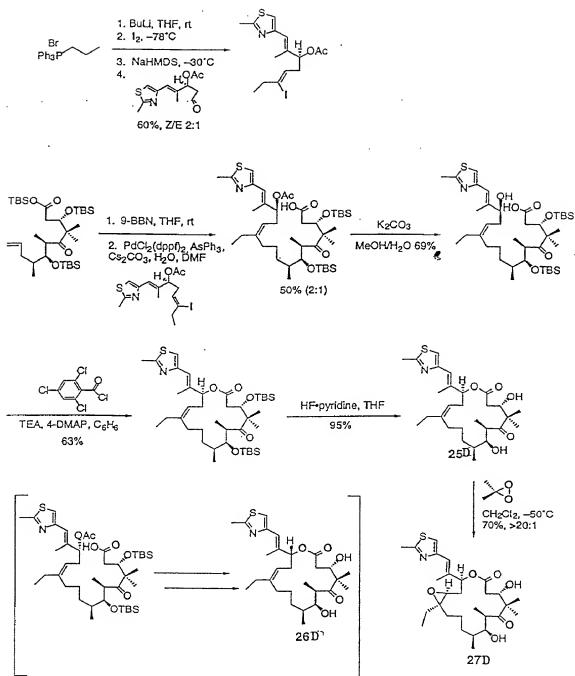


FIGURE 22

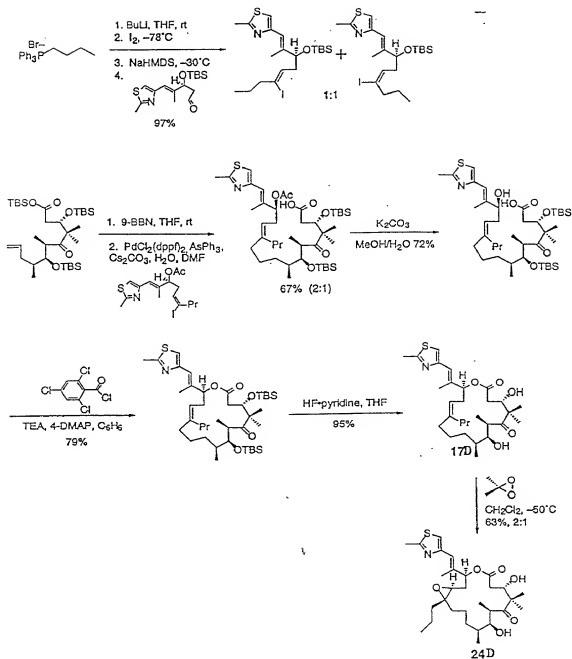


FIGURE 23

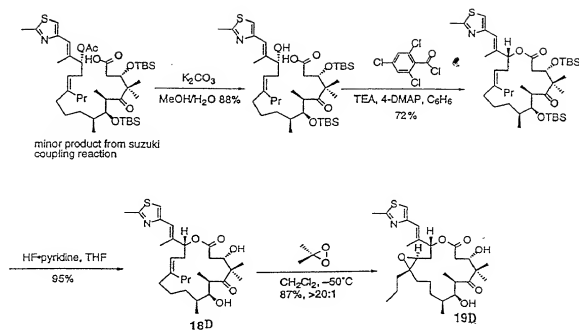


FIGURE 24

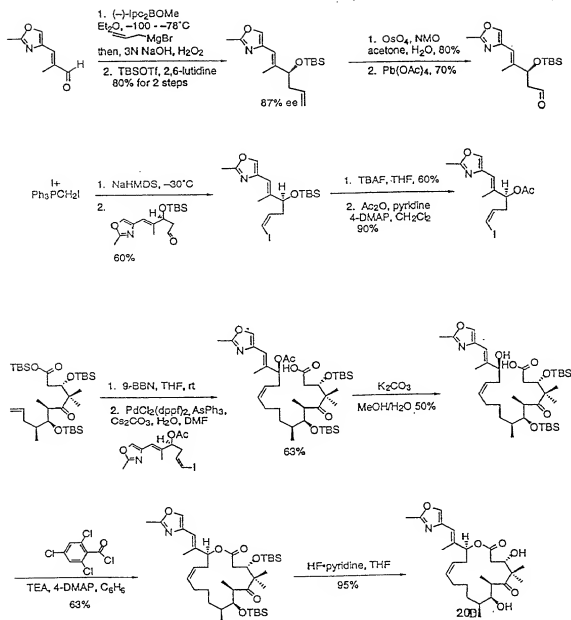


FIGURE 25

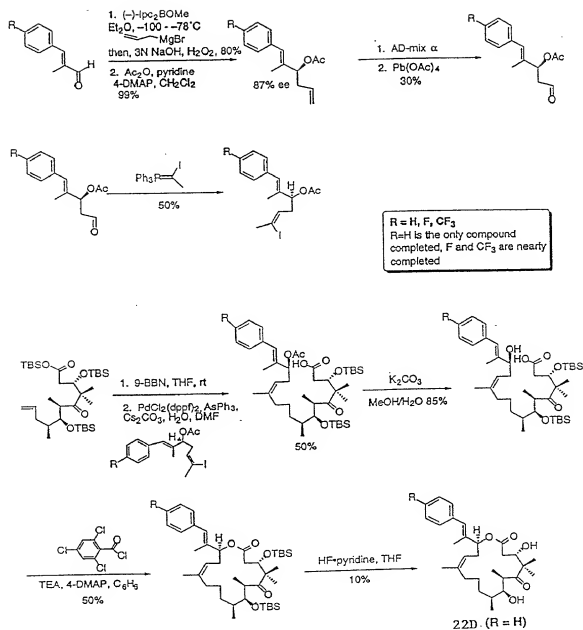


FIGURE 26

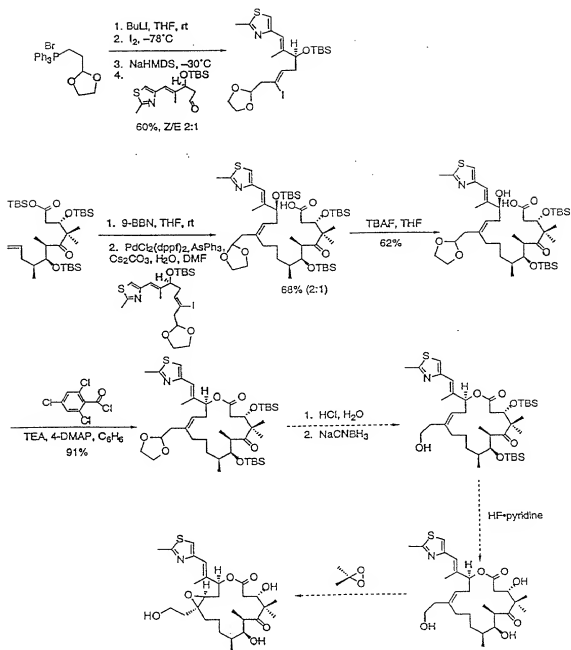


FIGURE 27

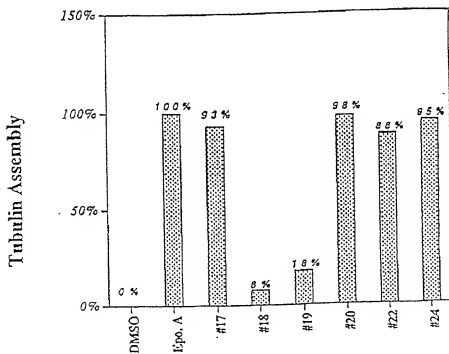
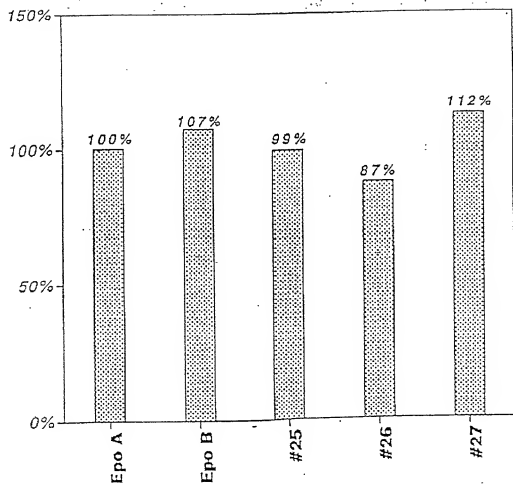


FIGURE 28

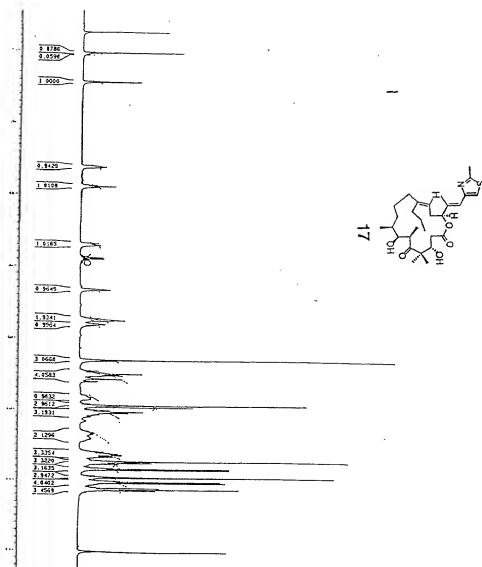


FIGURE 29

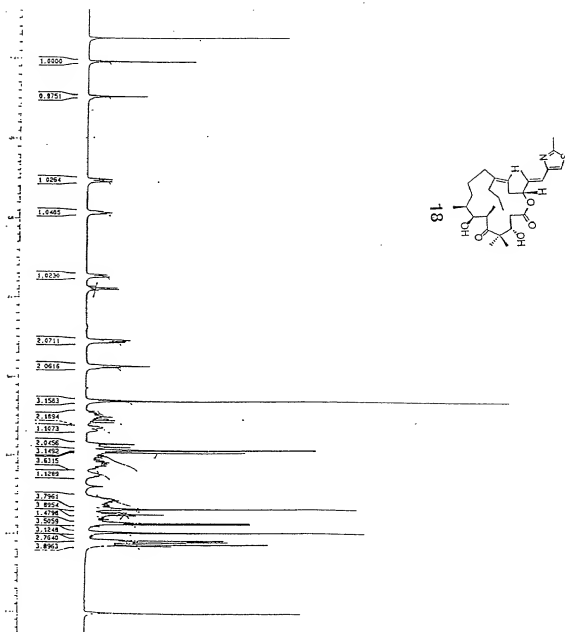


FIGURE 30

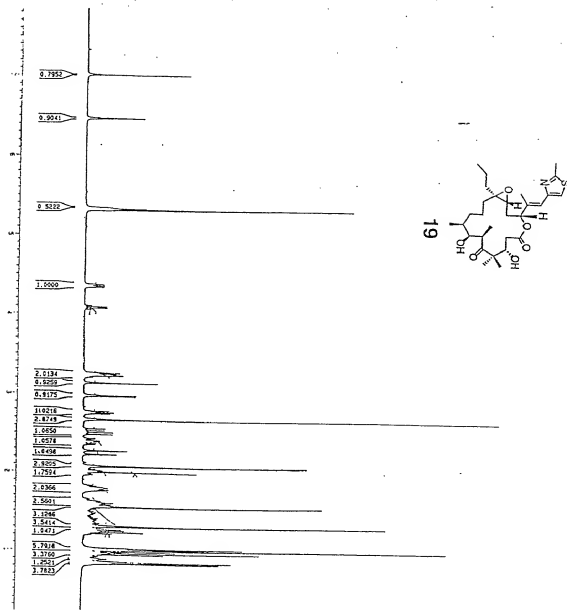


FIGURE 31

20

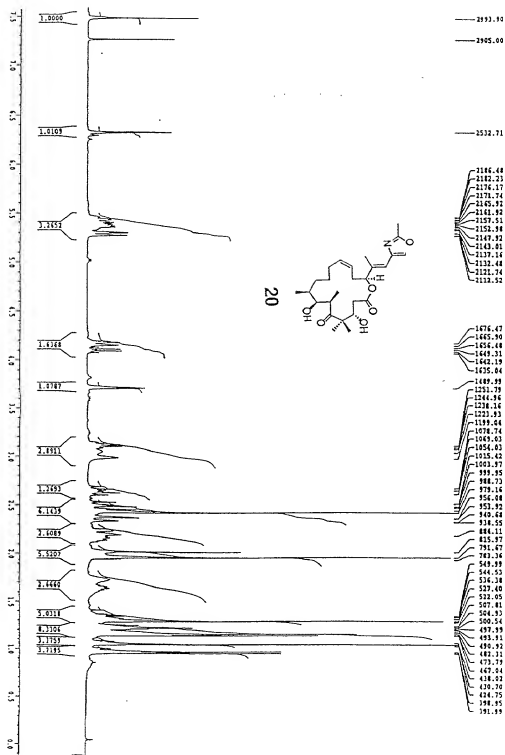


FIGURE 32

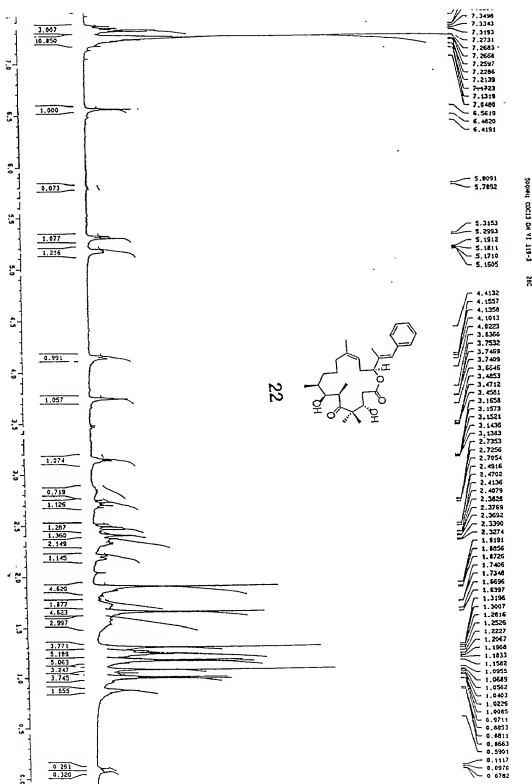


FIGURE 33

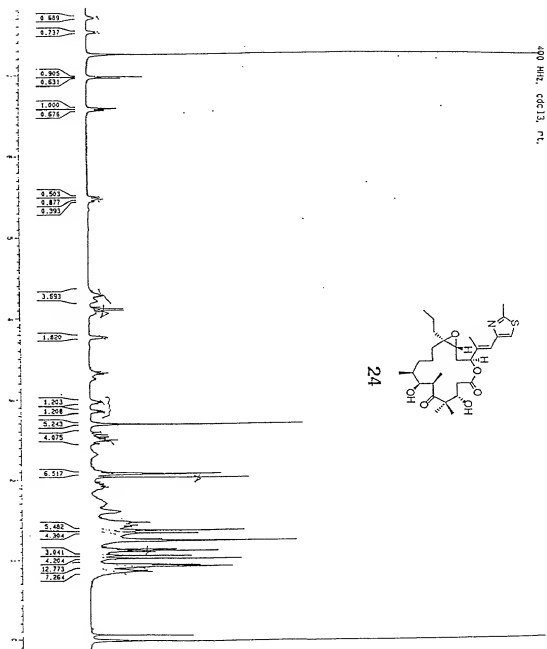


FIGURE 34

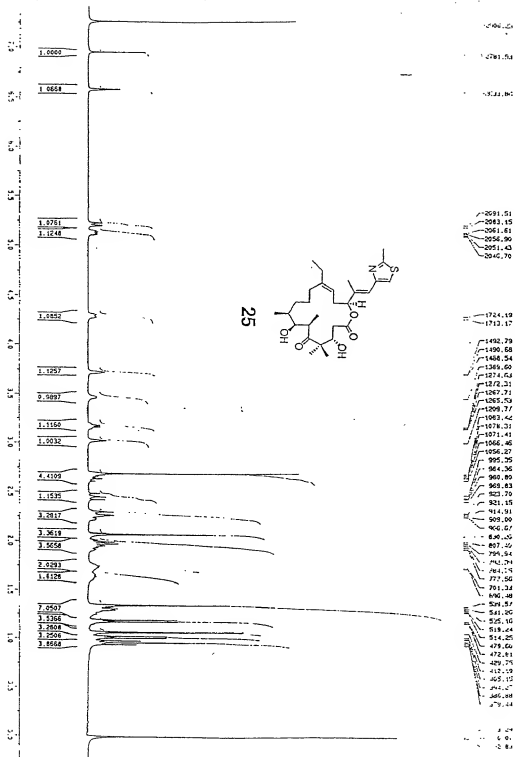


FIGURE 35

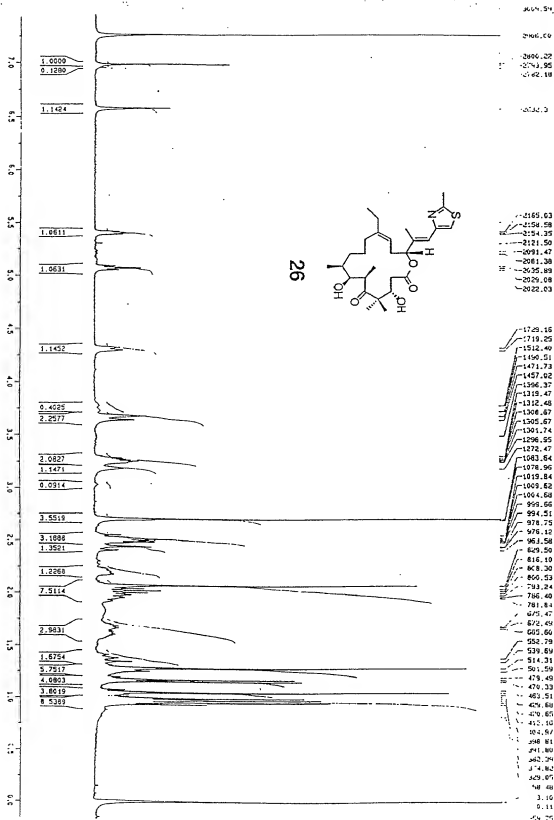


FIGURE 36

055-II-13a-11

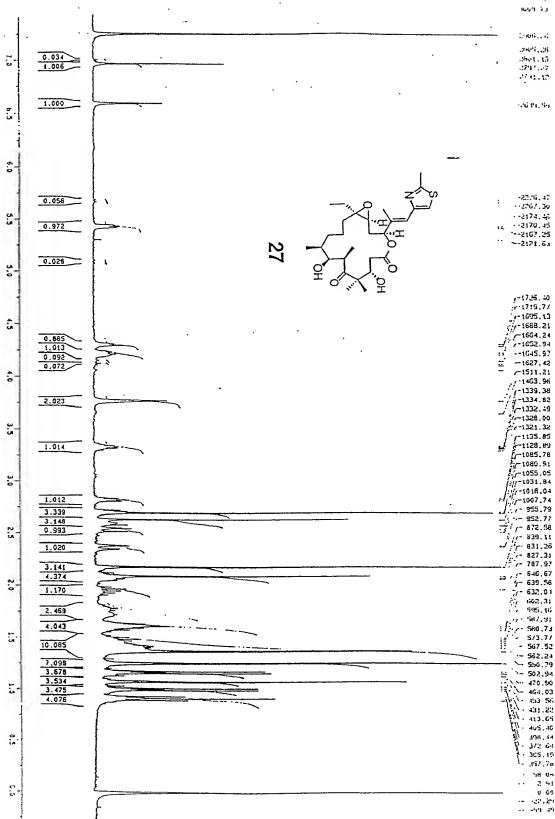


FIGURE 37

COMBINATION INDEX

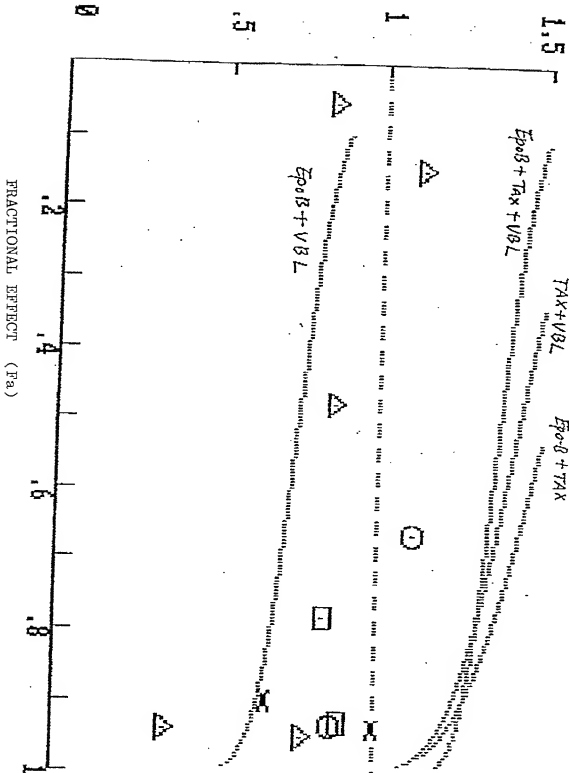
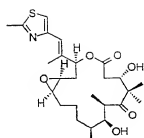
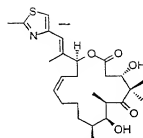


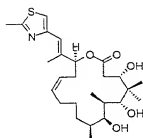
Figure 38



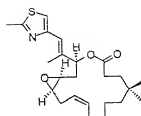
epothilone A
(0.0027)
[0.020]



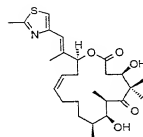
desoxyepothilone A
1
(0.022)
[0.012]



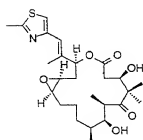
2
(14.23)
[6.28]



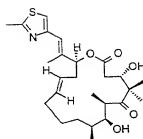
3
(271.1)
[22.4]



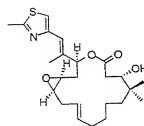
4
(2.12)
[43.0]



5
(>20)
[35.2]

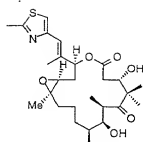


6
(0.052)
[0.035]



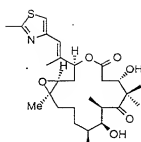
7
(7.36)
[9.82]

Fig. 39



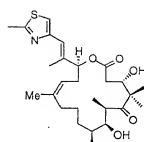
synthetic epothilone B

8
(0.00044)
[0.0026]



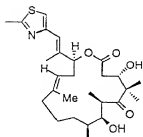
natural epothilone B

9
(0.00017)
[0.0012]

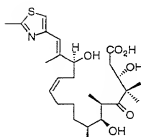


desoxyepothilone B

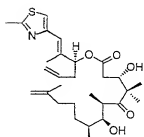
10
(0.0095)
[0.017]



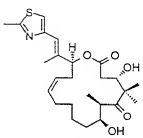
11
(0.090)
[0.262]



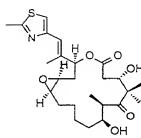
12
(0.79)
[>5]



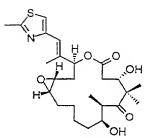
13
(11.53)
[5.63]



14
(5.42)
[5.75]

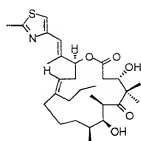


15
(0.96)
[5.95]

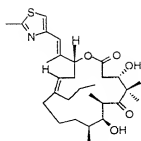


16
(7.47)
[16.48]

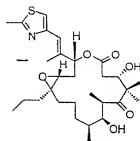
Fig. 40



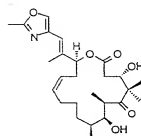
17
(0.090)
[0.254]



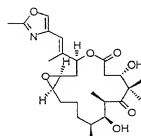
18
(1158)
[>720]



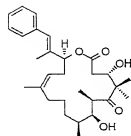
19
(0.96)
[>1.0]



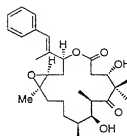
20
(0.030)
[0.049]



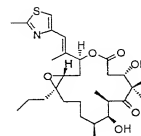
21



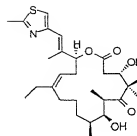
22
(0.098)
[0.146]



23



24
(0.0043)
[0.032]

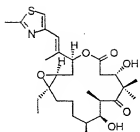


25
(0.021)
[0.077]

Fig. 41

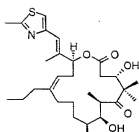
26

(0.055)
[0.197]



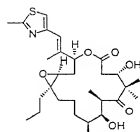
27

(0.0010)
[0.0072]



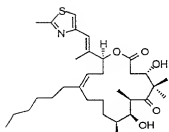
28

(0.039)
[0.067]



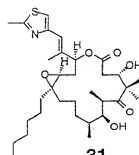
29

(0.0038)
[0.0064]



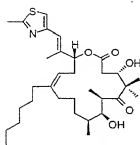
30

(0.044)
[0.108]



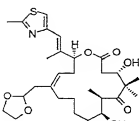
31

(0.027)
[0.049]



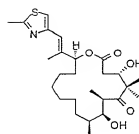
32

(0.063)
[0.380]



33

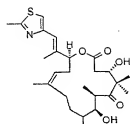
(0.0031)
[0.0093]



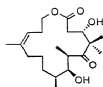
34

(0.143)
[0.276]

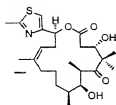
Fig. 42(A)



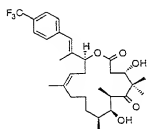
35
(>10)
[8.95]



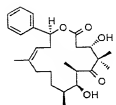
36
(234.5)
[>10]



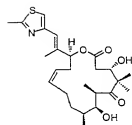
37
(3.25)
[1.20]



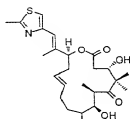
38
(0.254)
[>5.0]



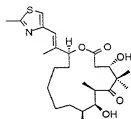
39
(1.80)
[>5.0]



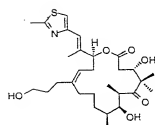
40
(36.9)
[47.3]



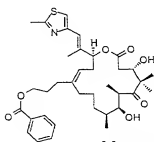
41
(60.1)
[59.2]



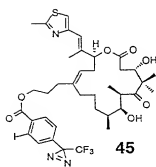
42
(7.41)
[12.9]



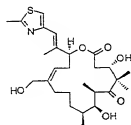
43
(0.0095)
[0.167]



44
(0.250)
[0.905]

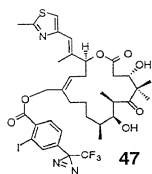


45

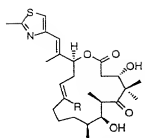


46
(0.049)
[>1.0]

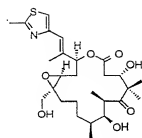
Fig. 42(B)



47



48 $R = (CH_2)_3OH$



49

Fig. 42(C)

Fig. 43(A)

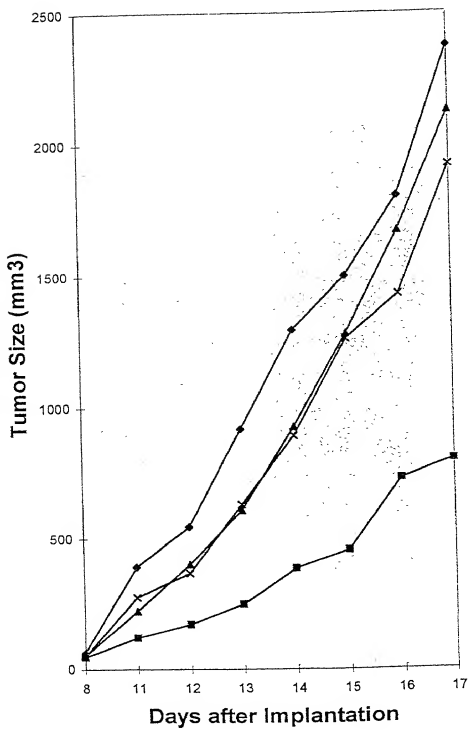
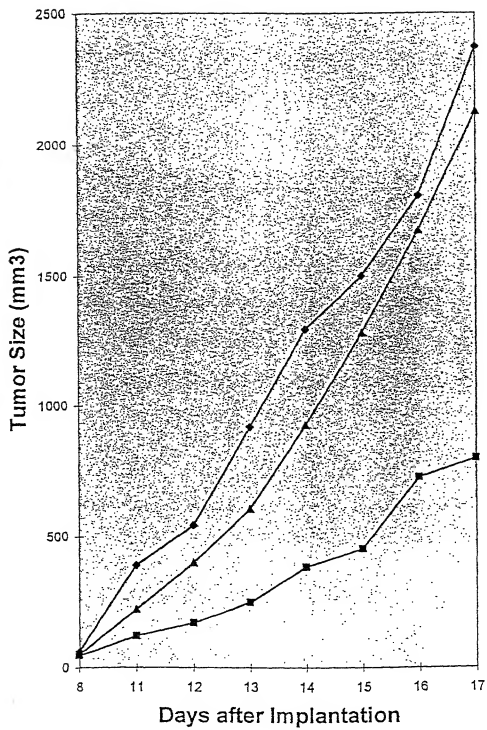


Fig. 43(B)



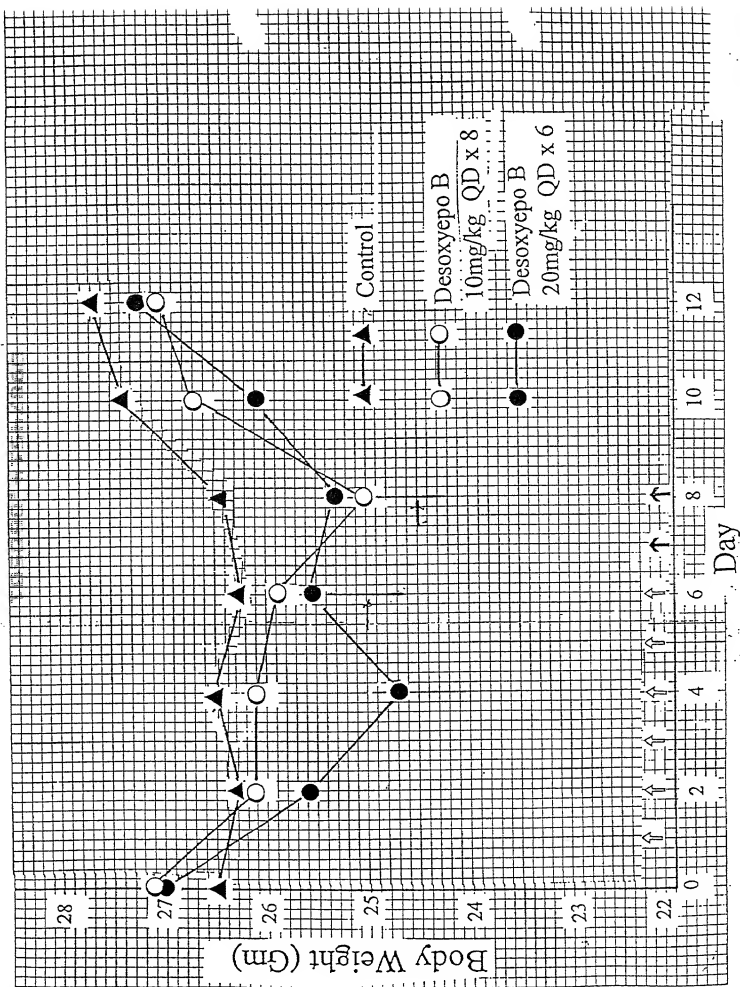


Fig. 44(A)

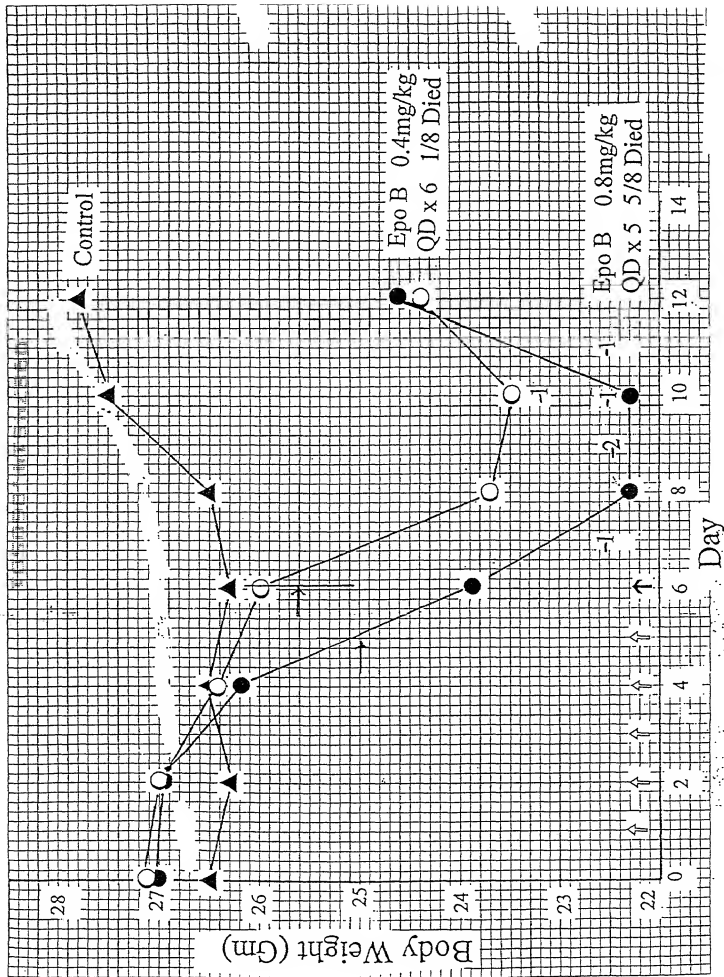


Fig. 44(B)

Fig. 45(A)

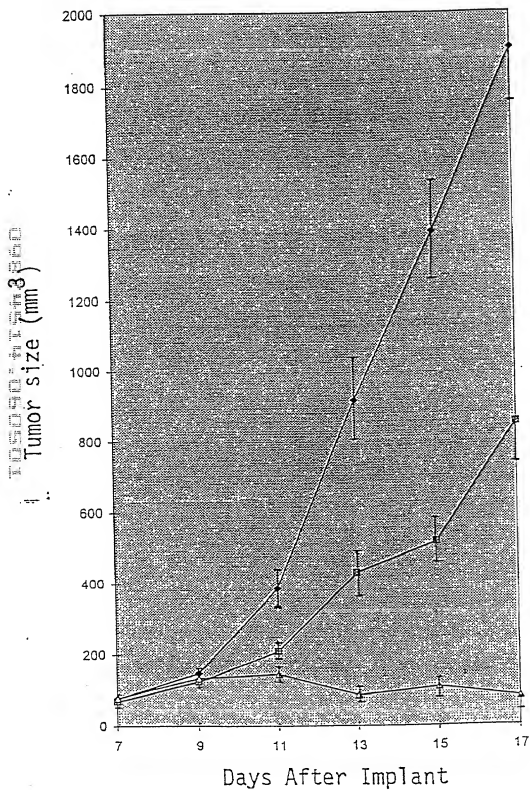
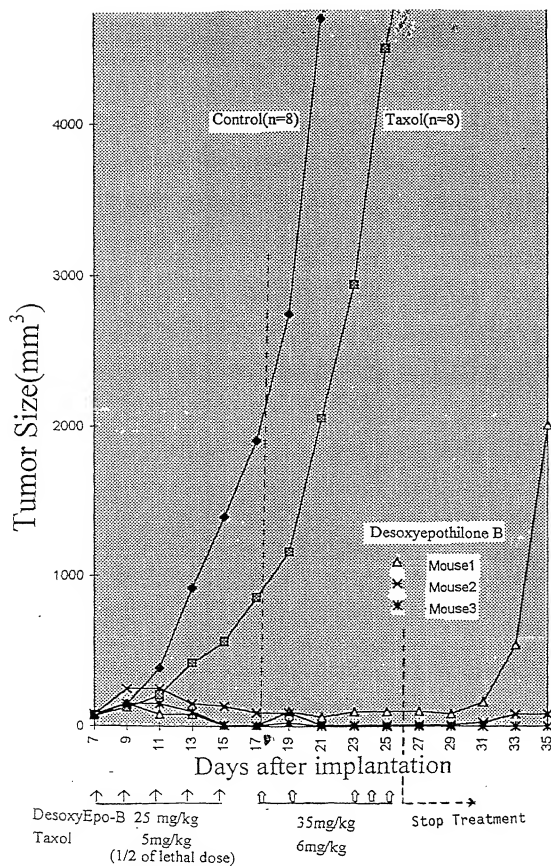


Fig. 45(B)



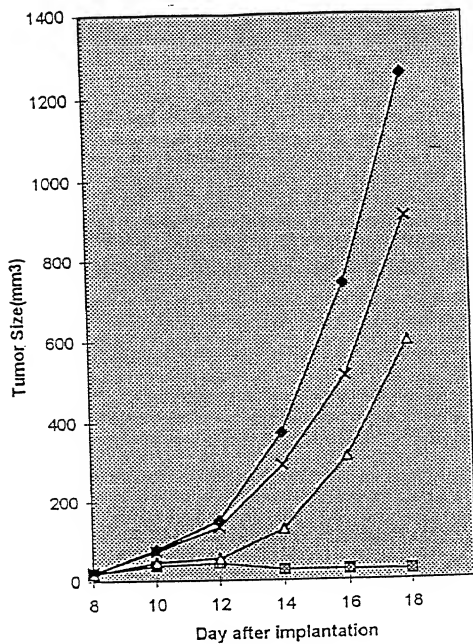
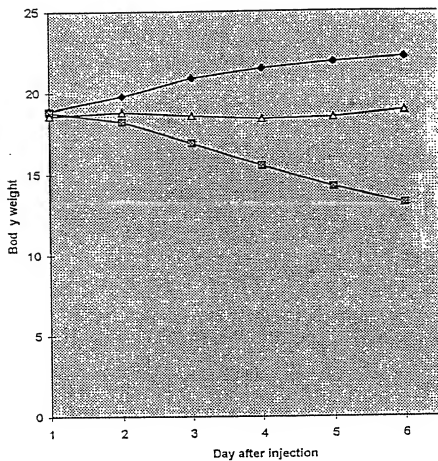
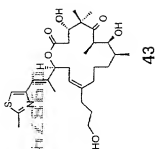


Fig. 46

Fig. 47





43

400 MHz, $cdCl_3$, rt.

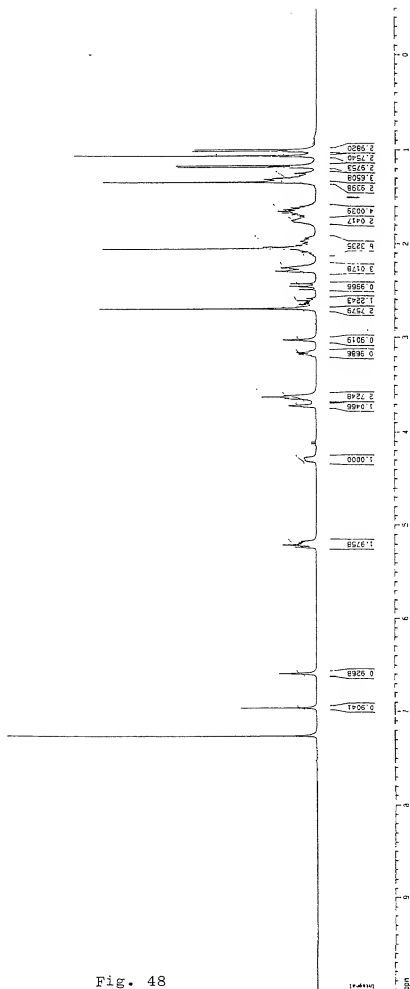
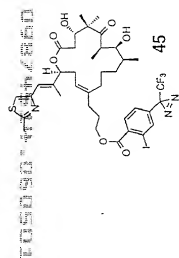


Fig. 48



500 MHz, CDCl₃, rt.

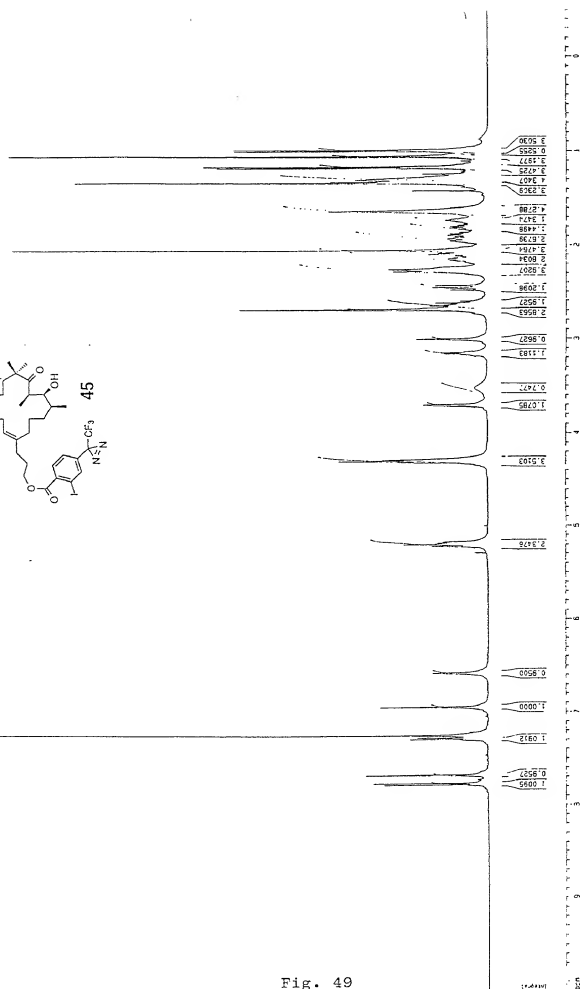
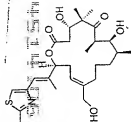
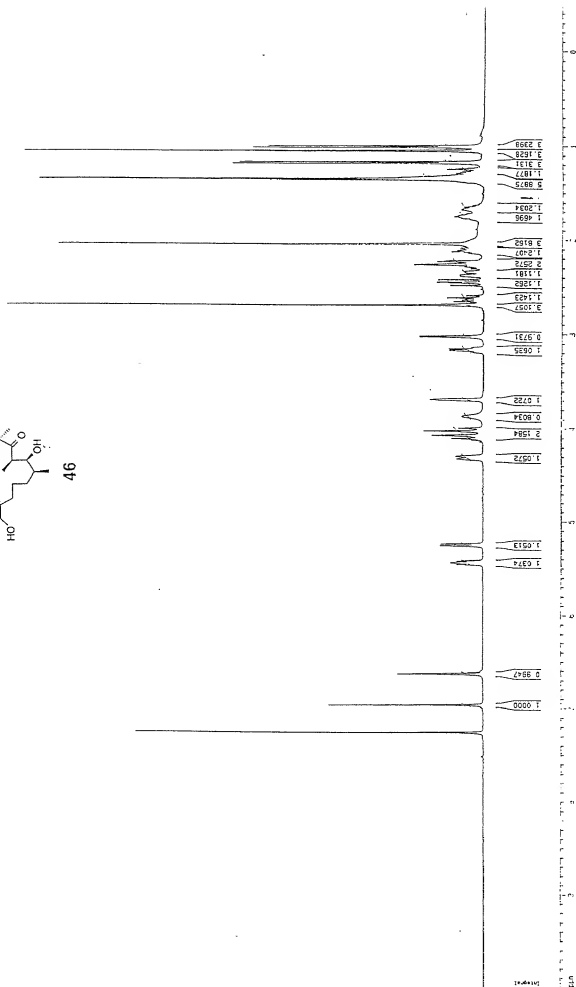


Fig. 49

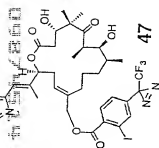
400 MHz, cdc13, rt.



46



500 MHz, CDCl₃, rt, crude alcohol mosher



III A0264
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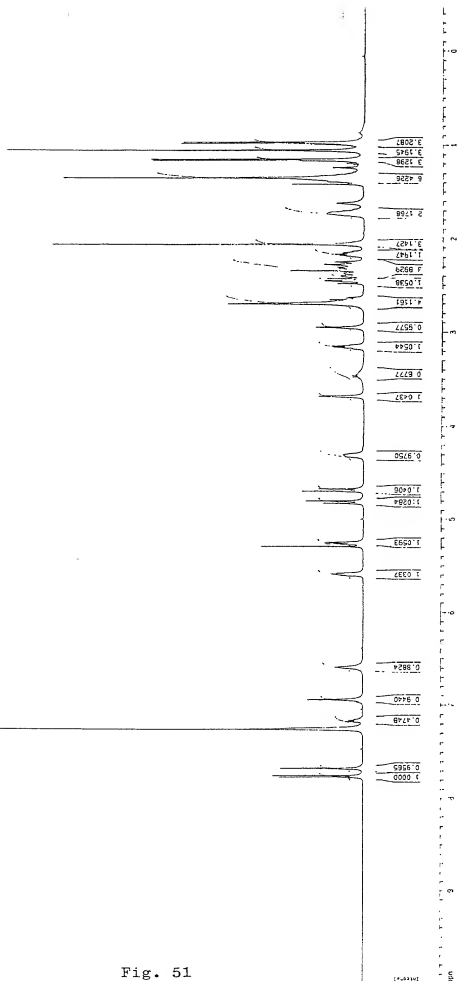
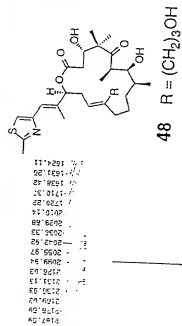


Fig. 51



2017년
2018년
2019년
2020년
2021년
2022년

24

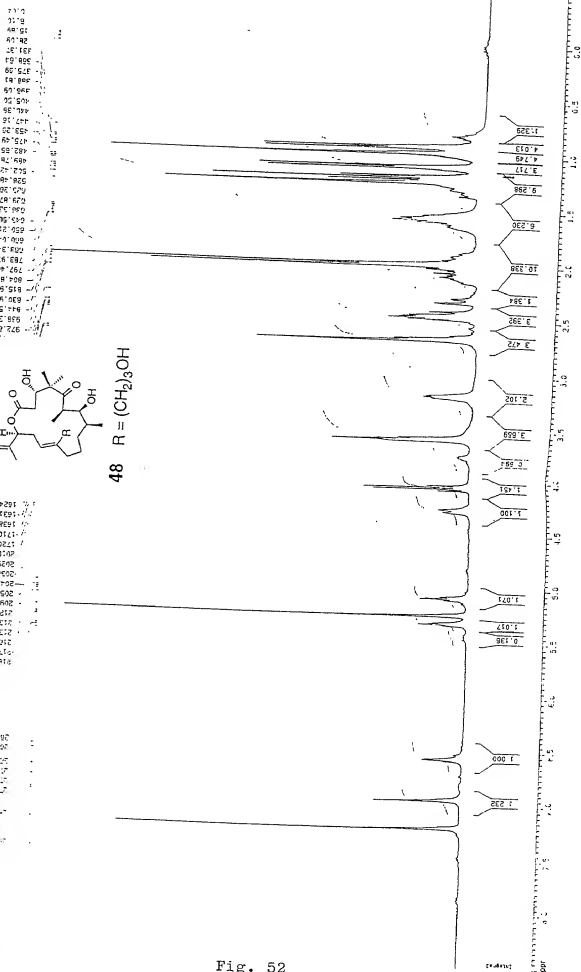
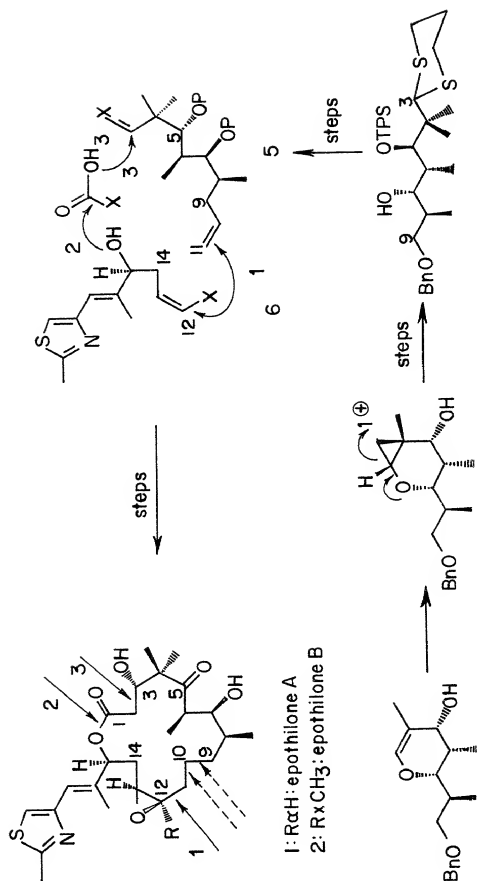


Fig. 52

FIG. 1A



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FIG. 1B

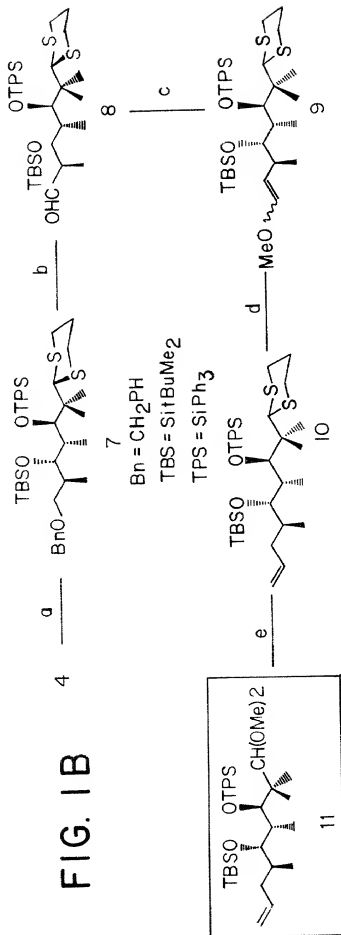


FIG. 12B

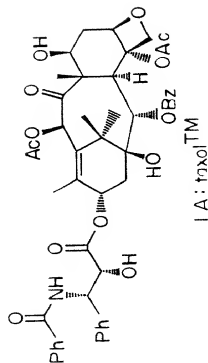


FIG. 12A

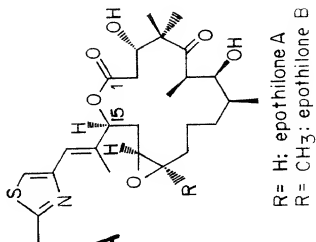
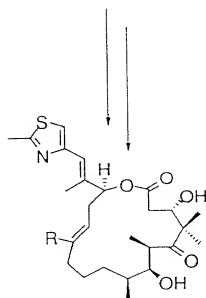
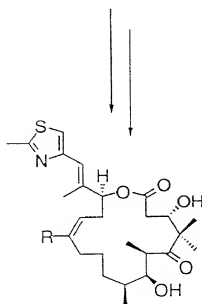
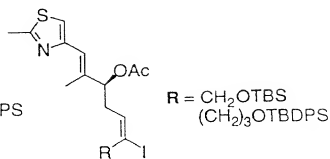
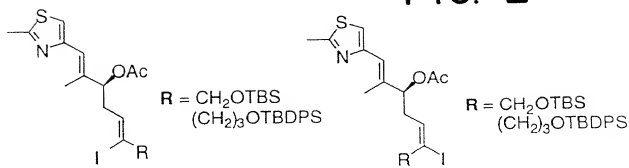


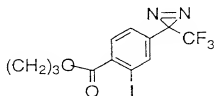
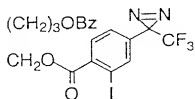
FIG. 2

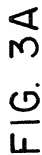


$\text{R} = \text{CH}_2\text{OH}$

$\text{R} = \text{CH}_2\text{OH}$
 $(\text{CH}_2)_3\text{OH}$

$(\text{CH}_2)_3\text{OH}$





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FIG. 3B

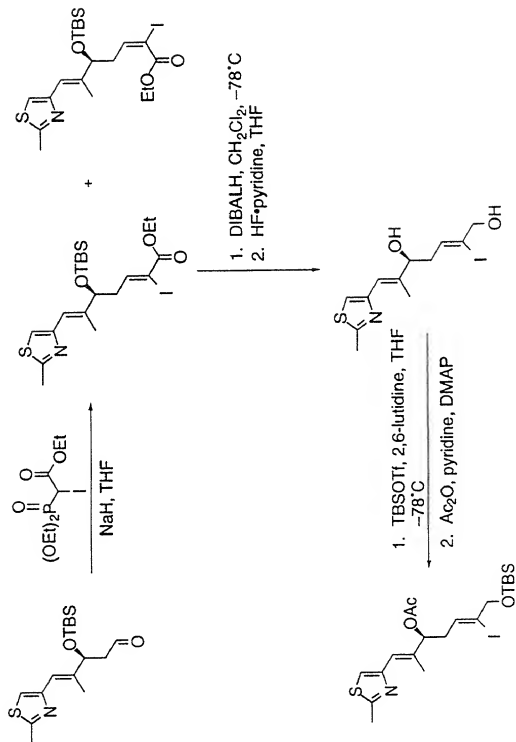
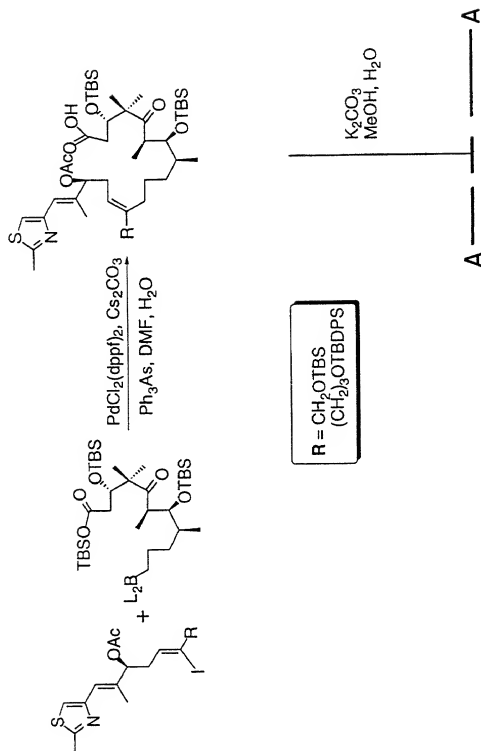


FIG. 3C



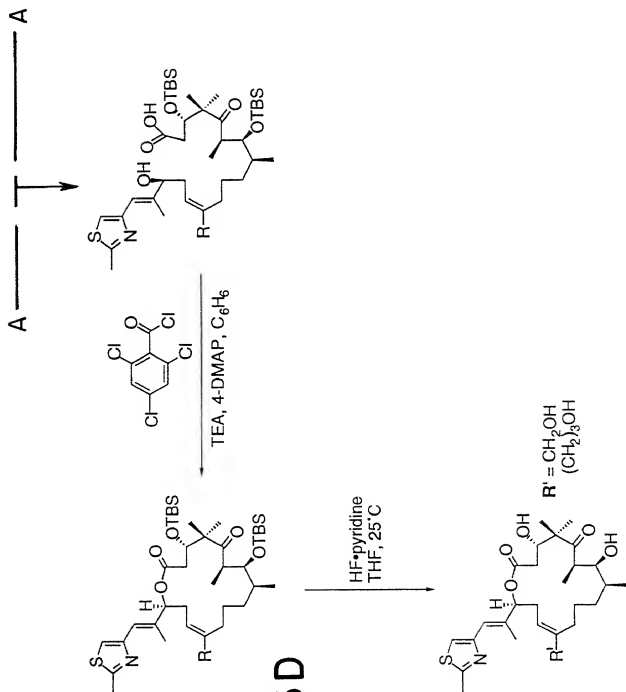


FIG. 3D

FIG. 3E

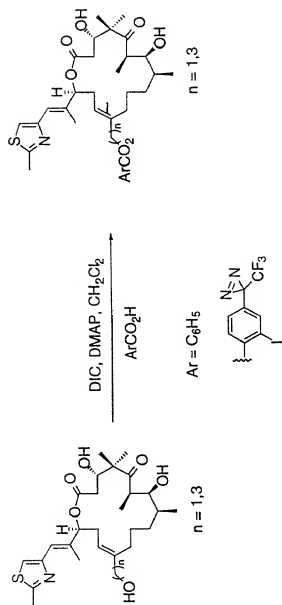


FIG. 3F

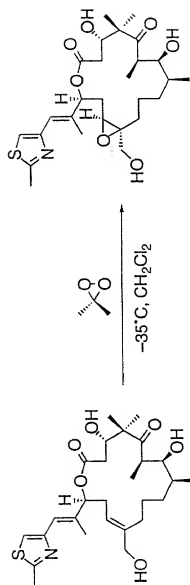


FIG. 4A

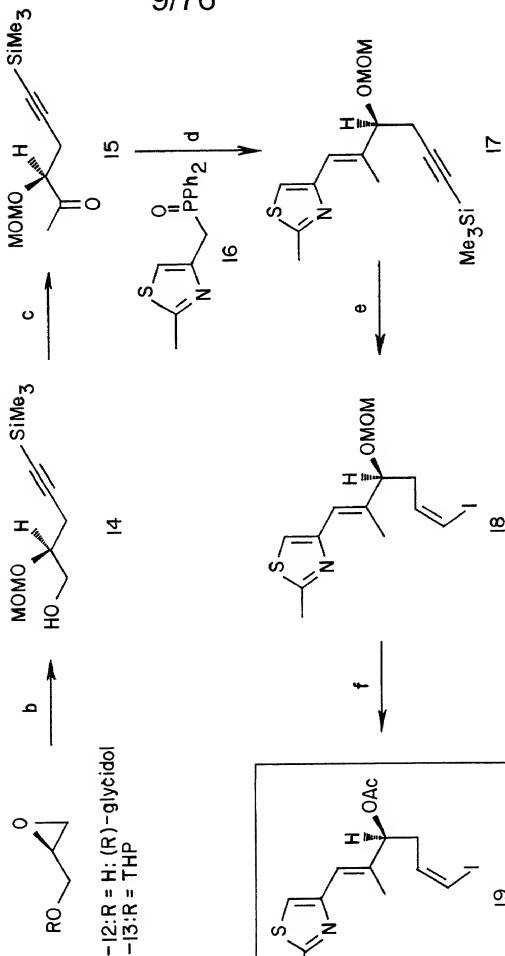


FIG. 4B

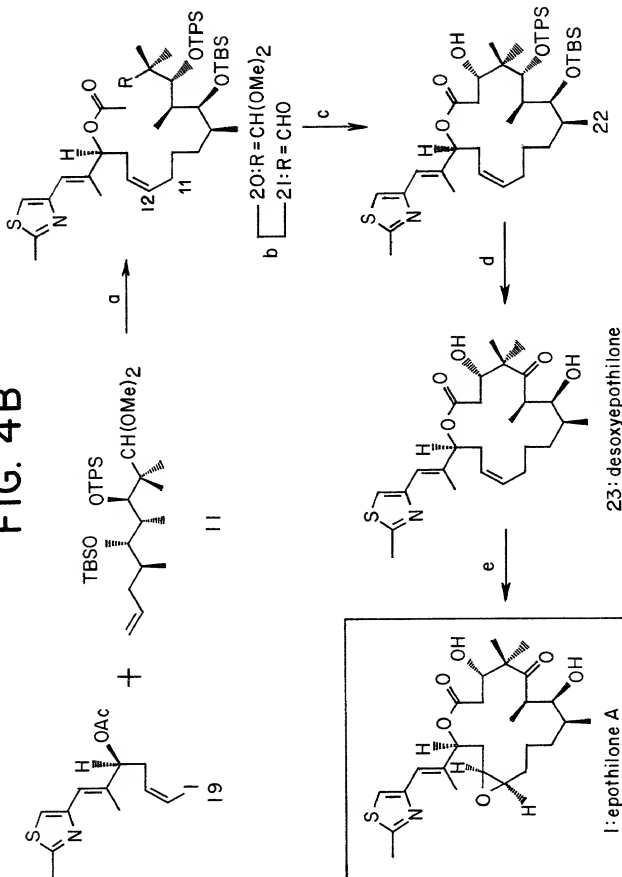


FIG. 5

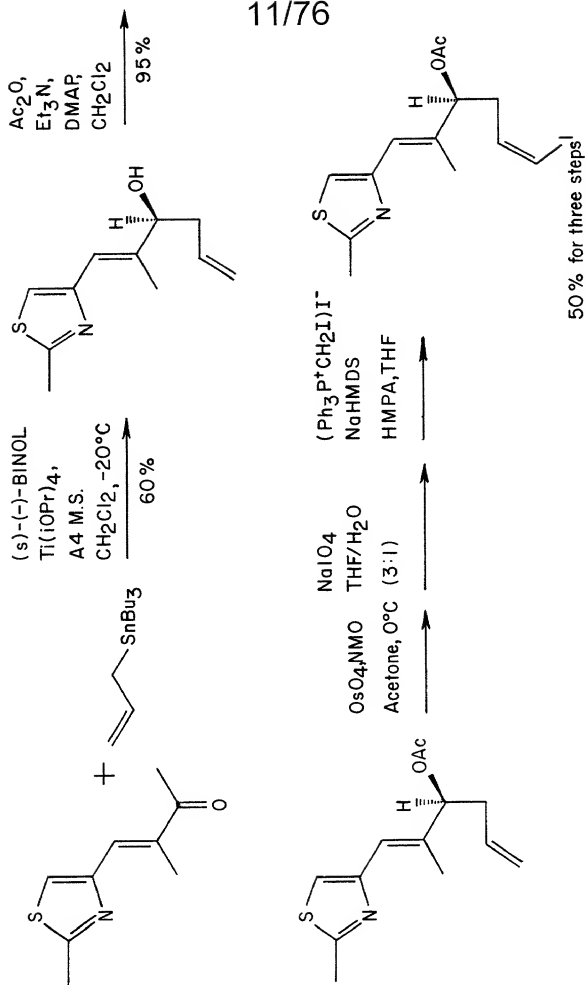


FIG. 6A

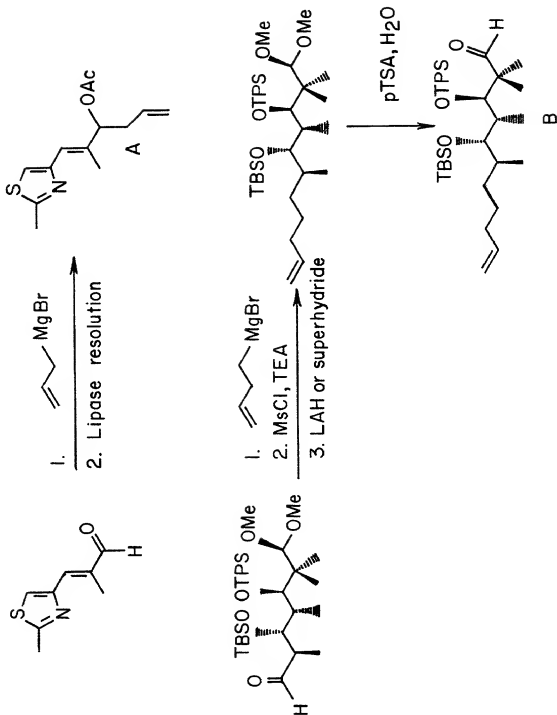
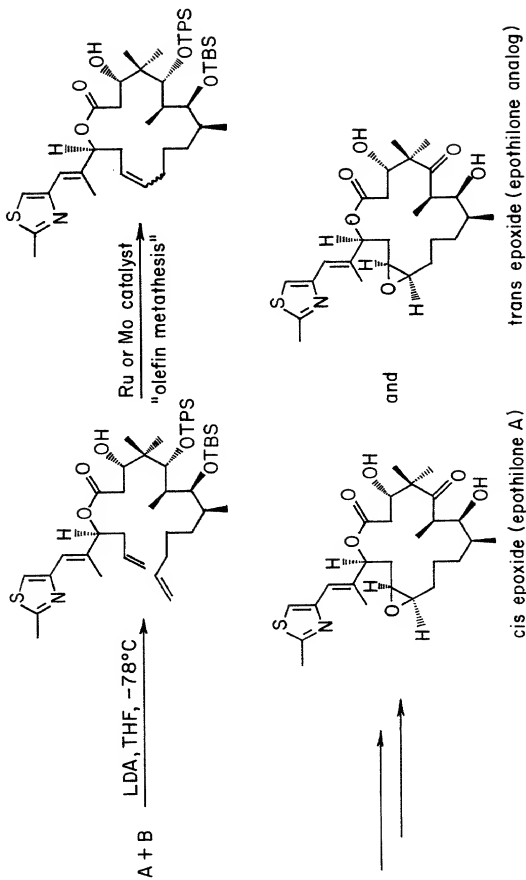
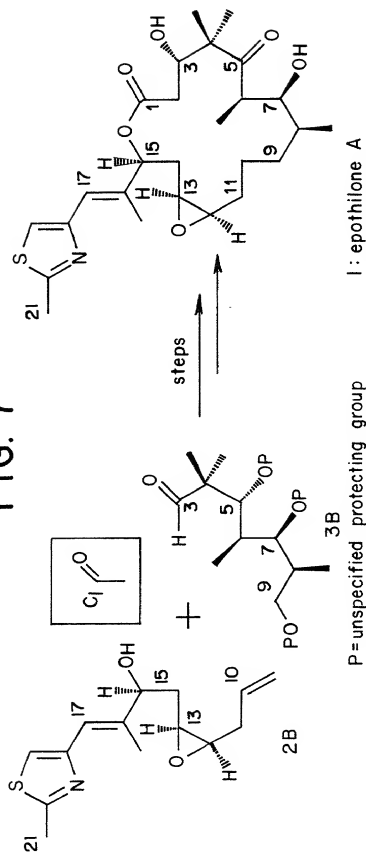


FIG. 6B



*17 steps from known starting materials vs. 27 steps for aldol macrocyclization

FIG. 7



Convergent strategy for a total synthesis of epothilone A (1).

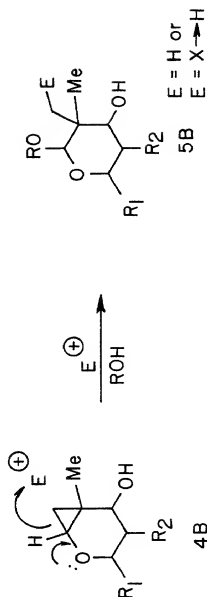
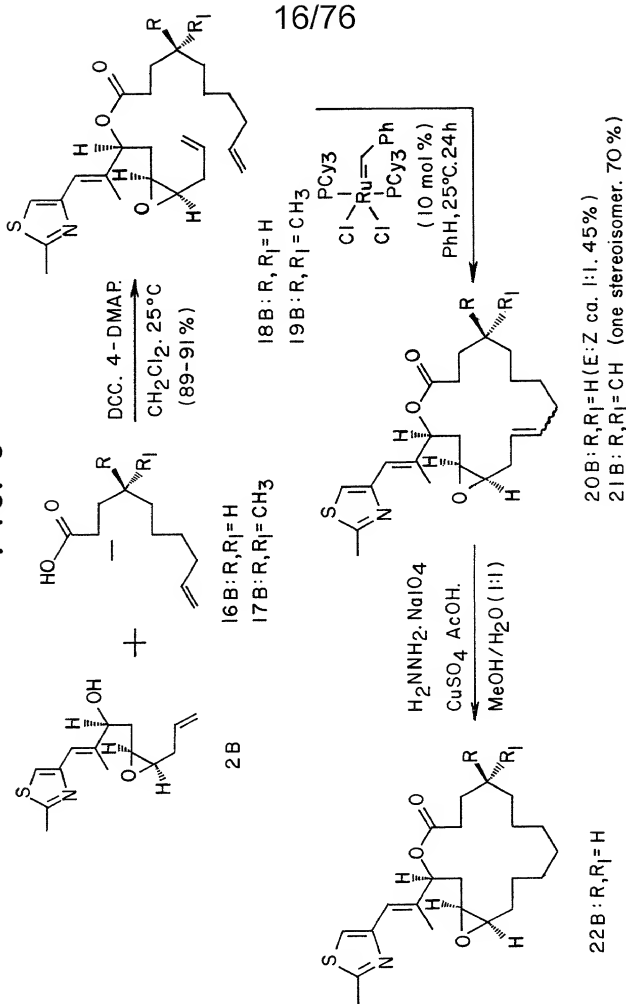


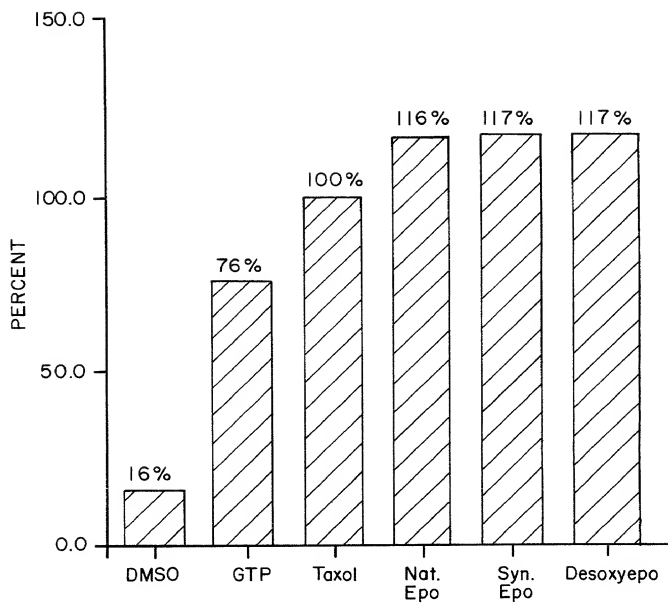


FIG. 9



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FIG. 10



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FIG. II

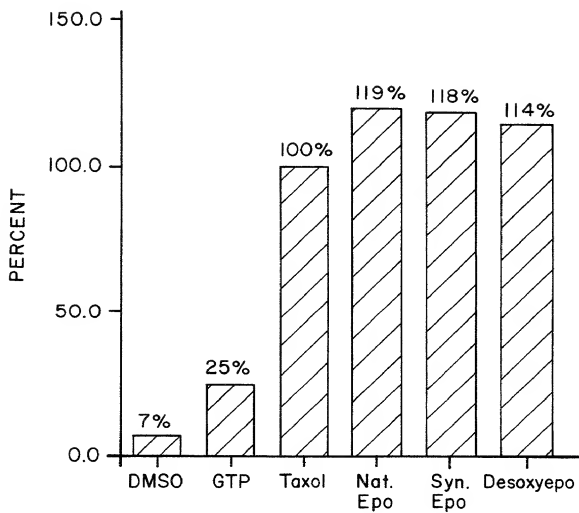


FIG. 13

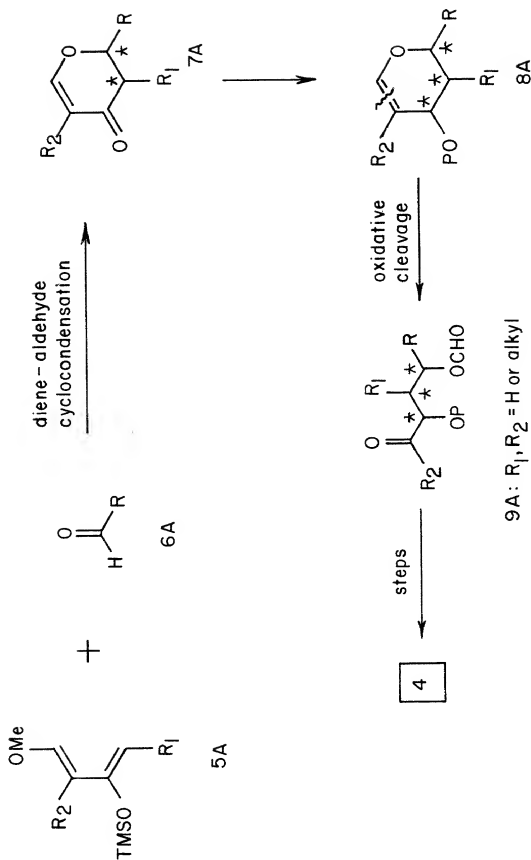
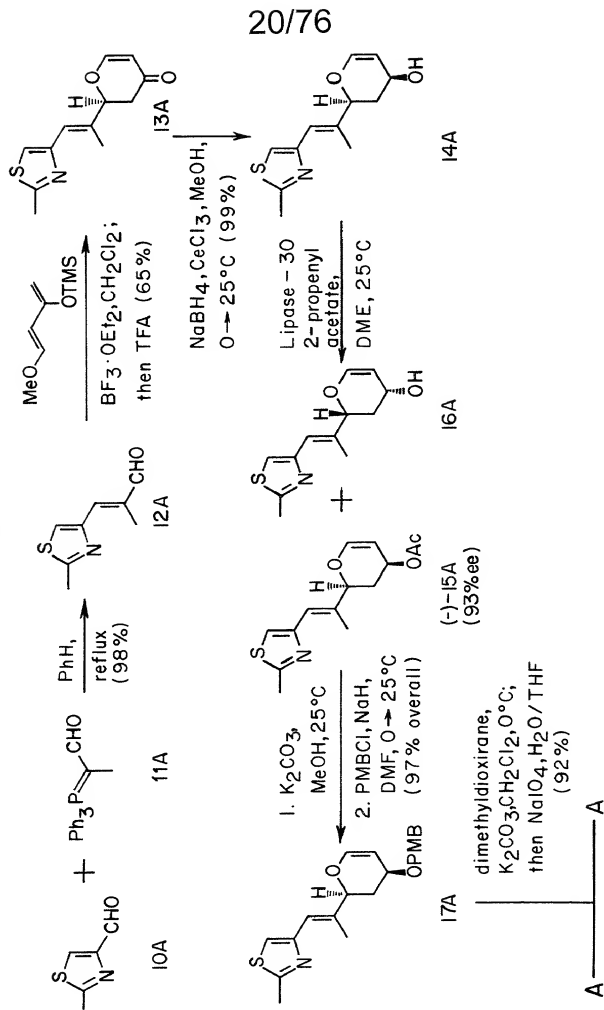


FIG. 14A



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FIG. 14B

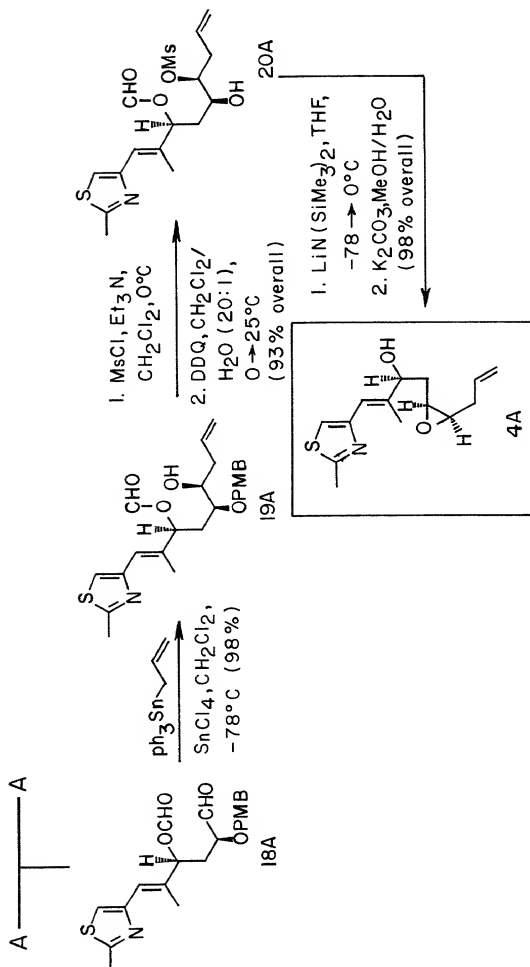
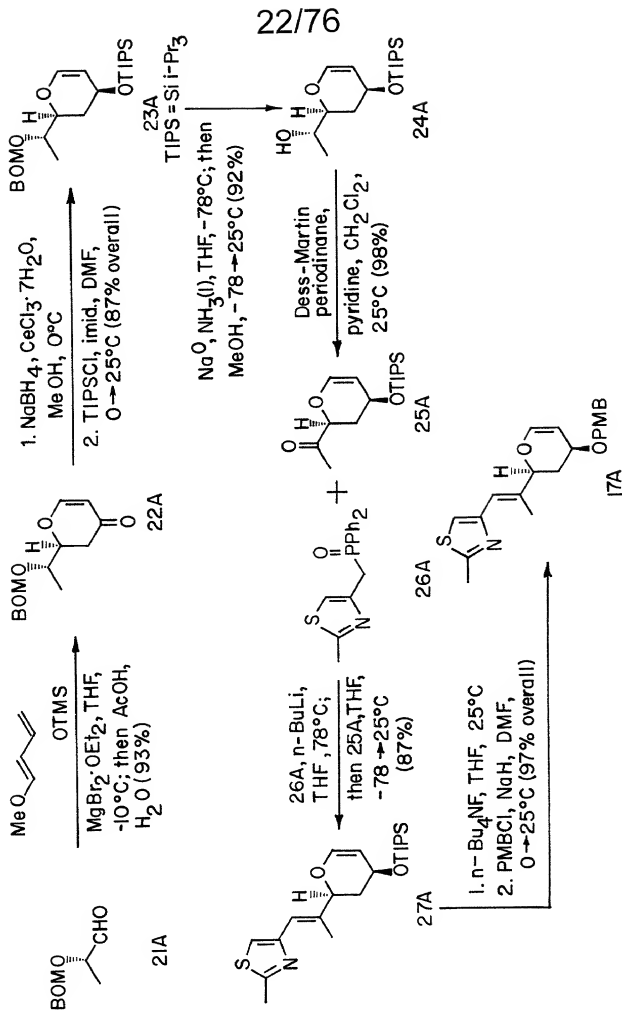


FIG. 15



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FIG. 16

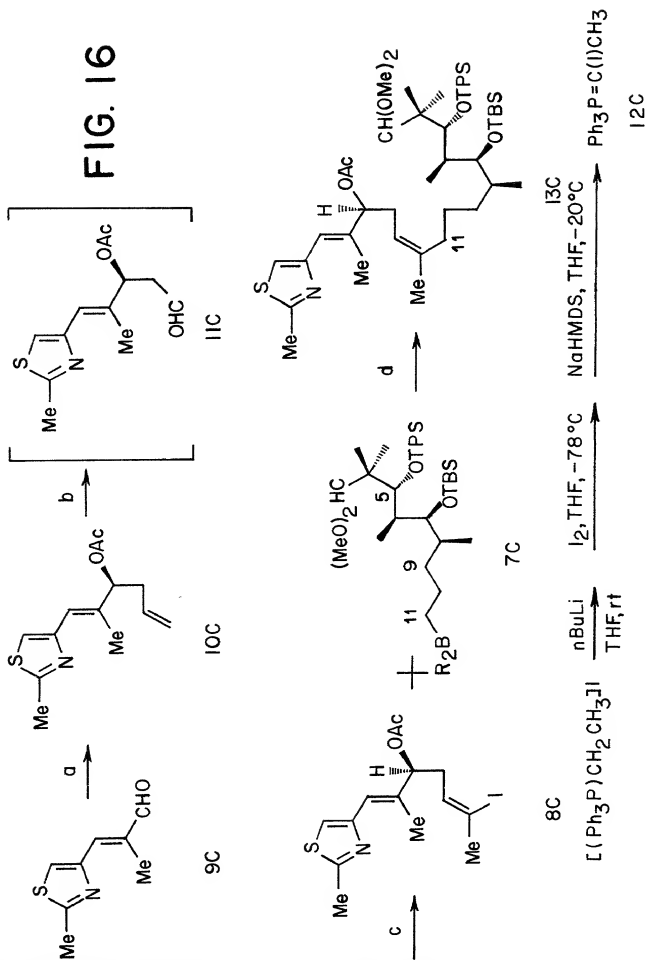
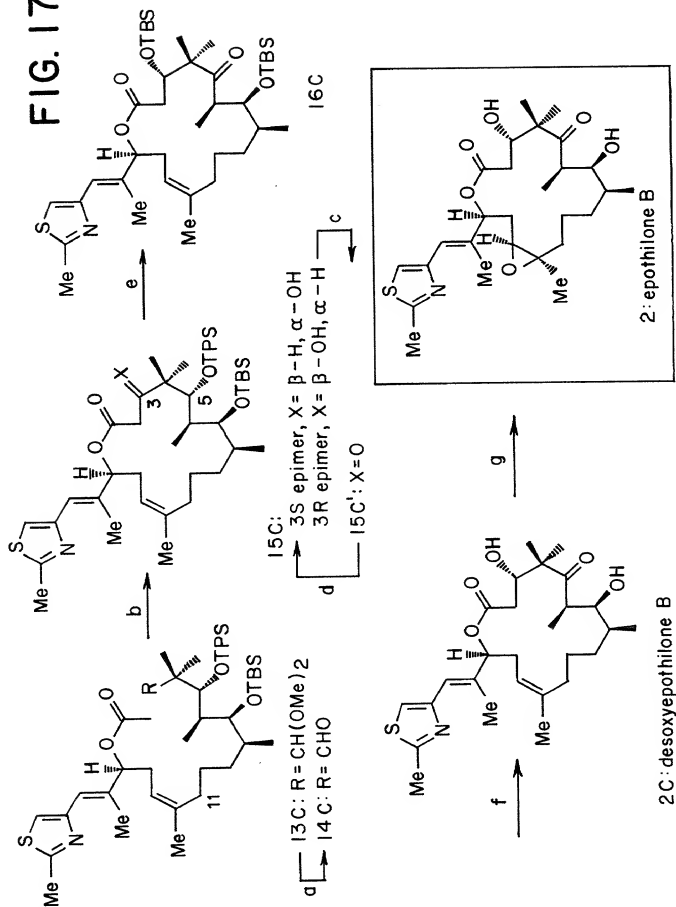


FIG. 17



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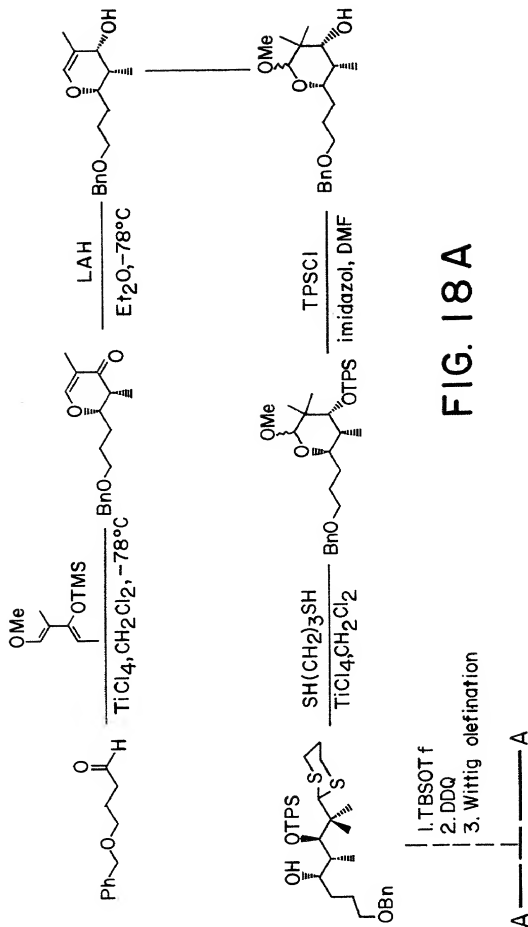


FIG. 18A

FIG. 18B

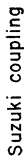


FIG. 19A

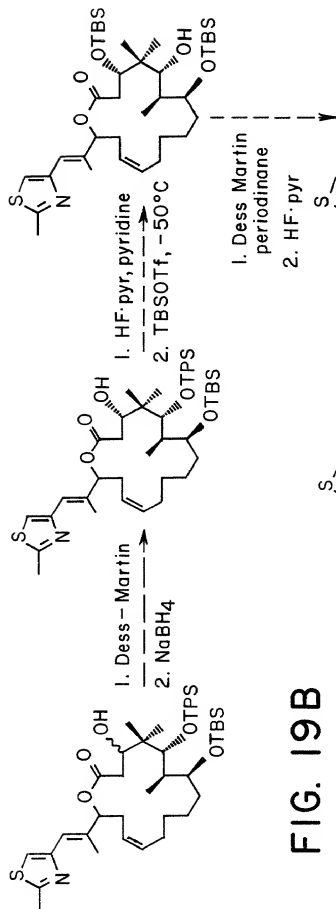
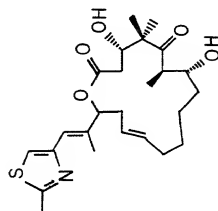


FIG. 19B



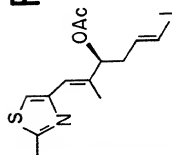
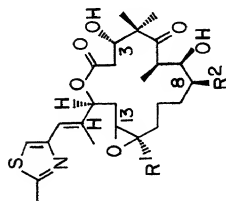


FIG. 19C

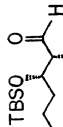
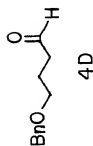
FIG. 20A



$R^1 = H, R^2 = Me$; epothilone A

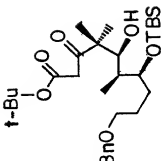
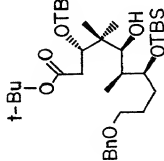
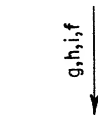
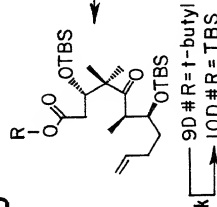
$R^1 = R^2 = Me$; epothilone B

$R^1 = R^2 = H$; C g - desmethyl - epothilone A (3D)



TBS = Sit-buMe₂

FIG. 20B



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FIG. 21

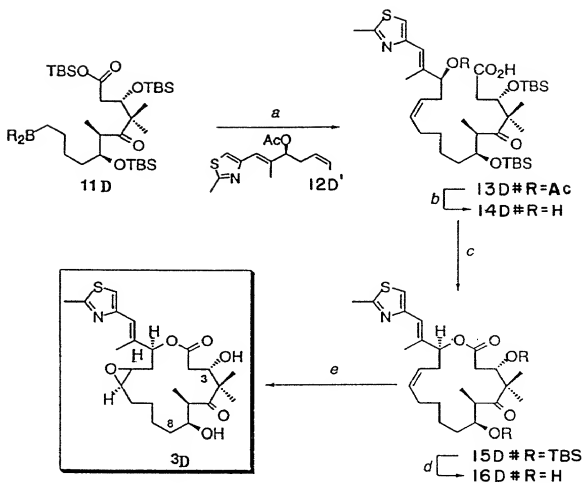


FIG. 22A

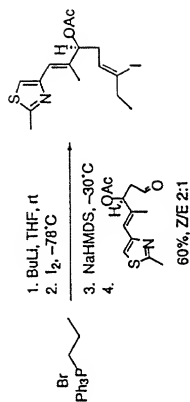


FIG. 22B

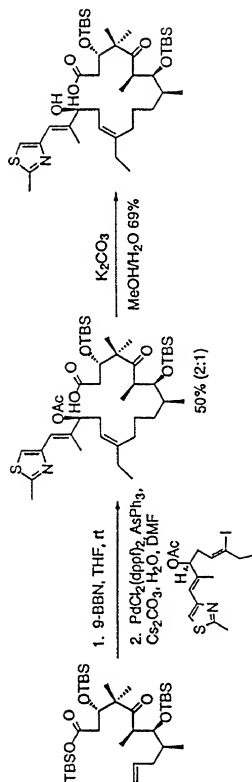


FIG. 22C

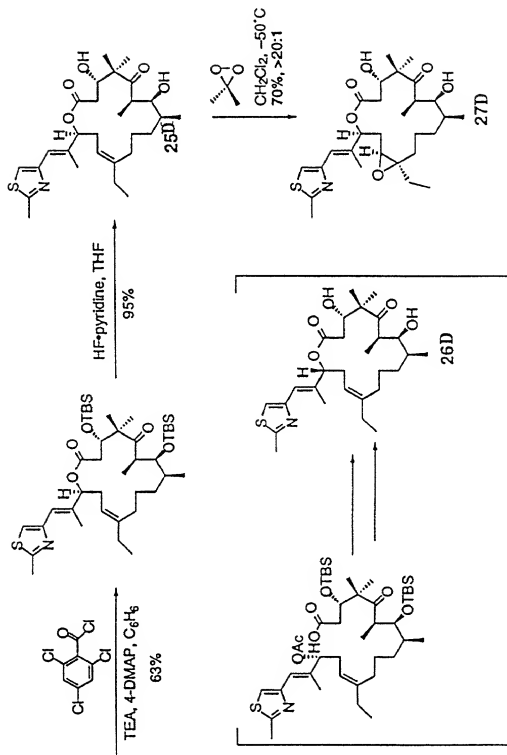


FIG. 23A

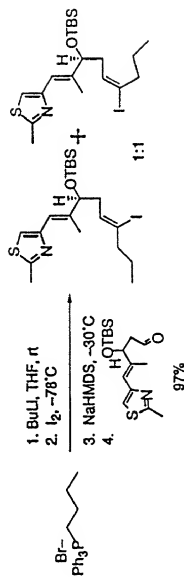


FIG. 23B

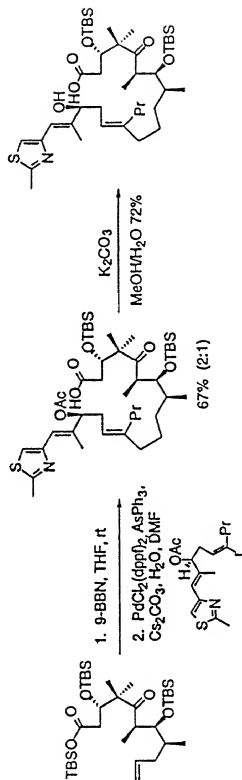


FIG. 23C

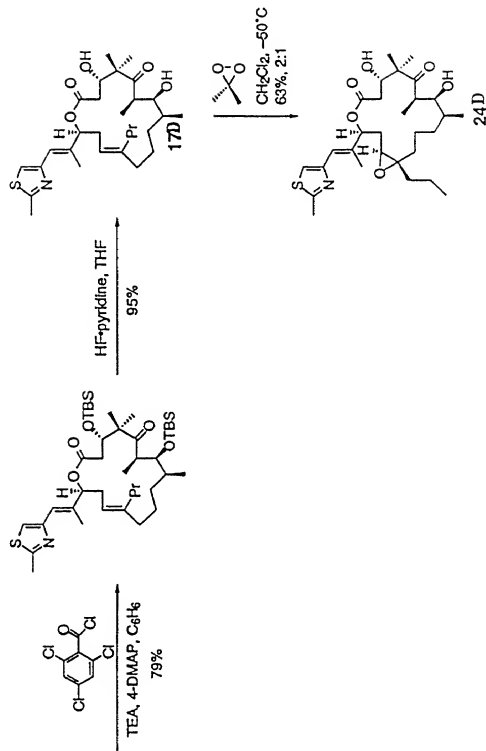
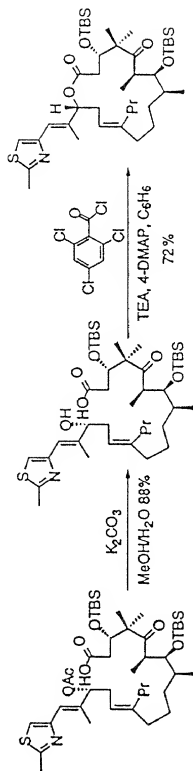


FIG. 24A



minor product from suzuki
coupling reaction

FIG. 24B

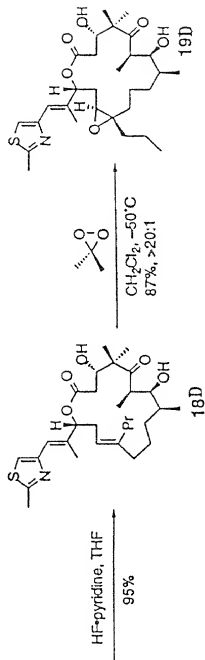


FIG. 25A

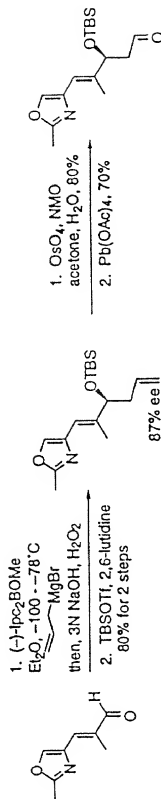


FIG. 25B

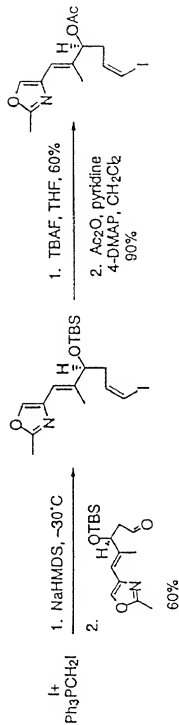
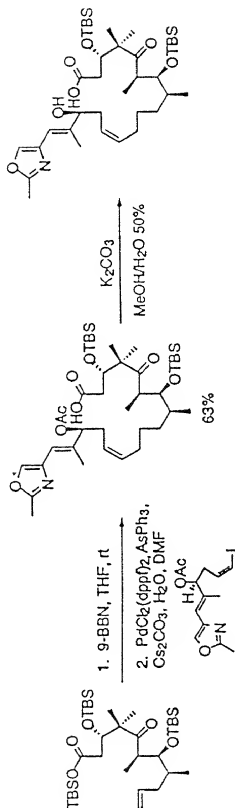
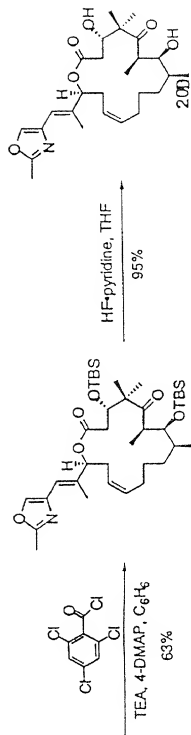


FIG. 25C



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FIG. 25D



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FIG. 26A

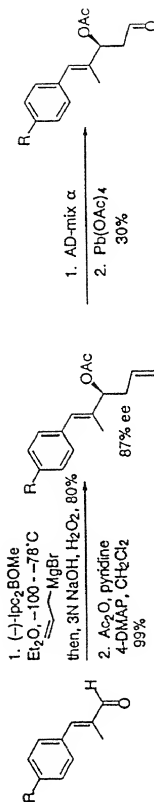
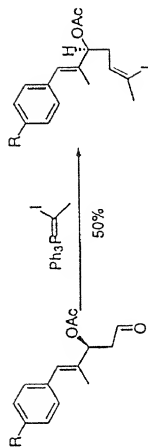
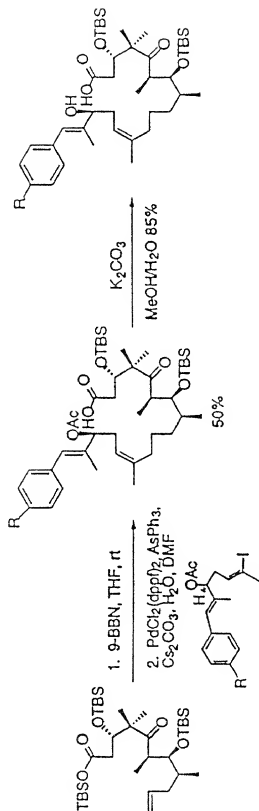


FIG. 26B



R = H, F, CF_3
 R=H is the only compound
 completed, F and CF_3 are nearly
 completed

FIG. 26C



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FIG. 26D

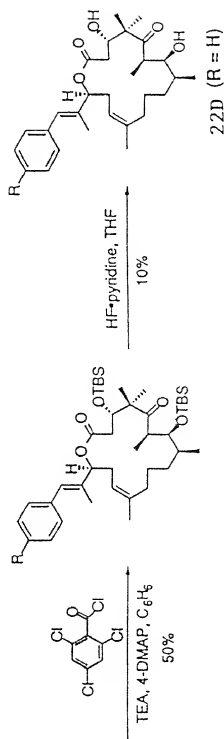


FIG. 27A

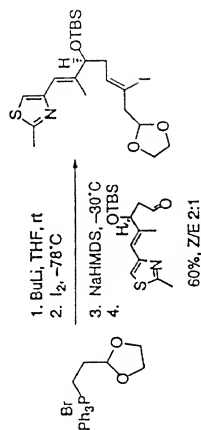


FIG. 27B

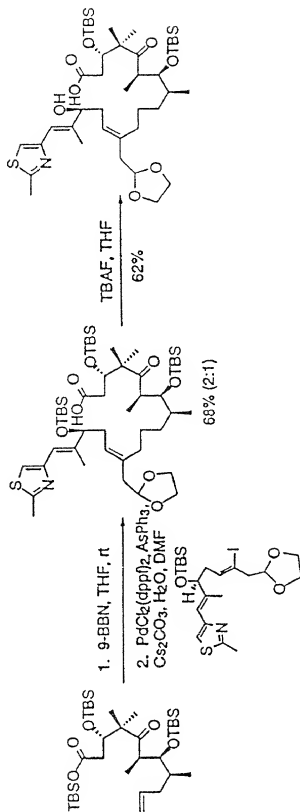
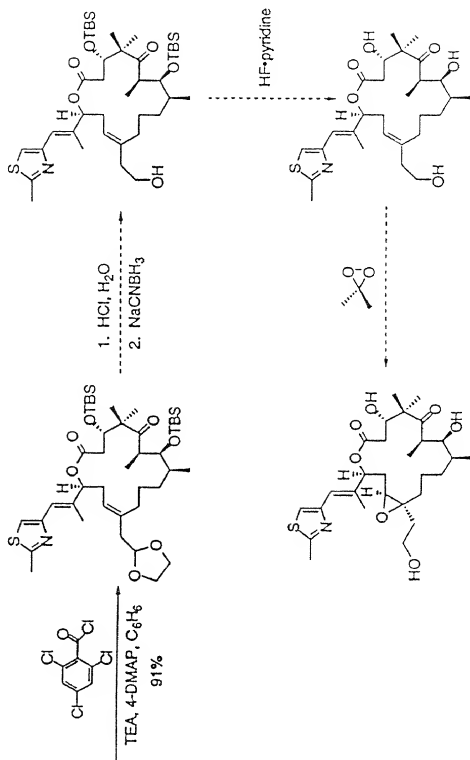


FIG. 27C



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FIG. 28A

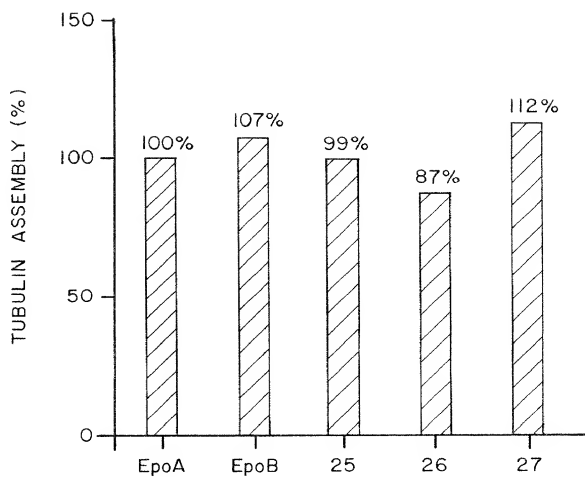
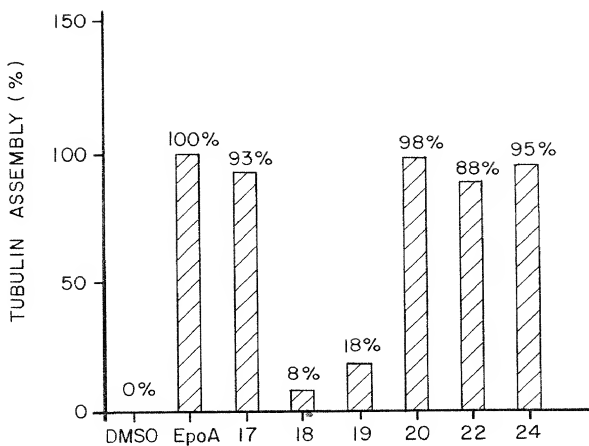


FIG. 28B



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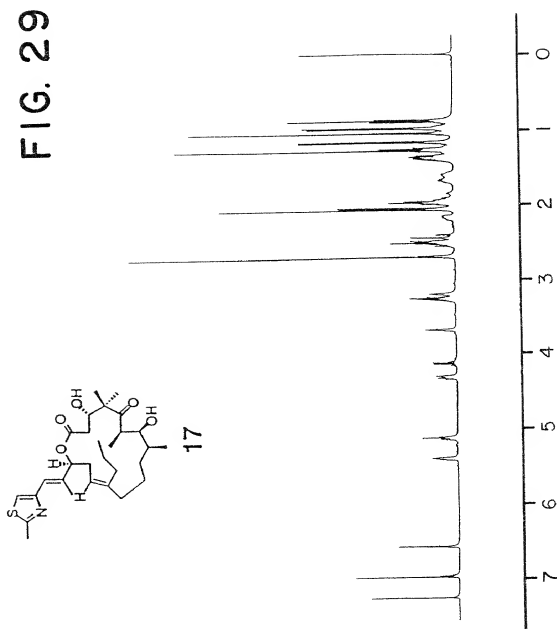
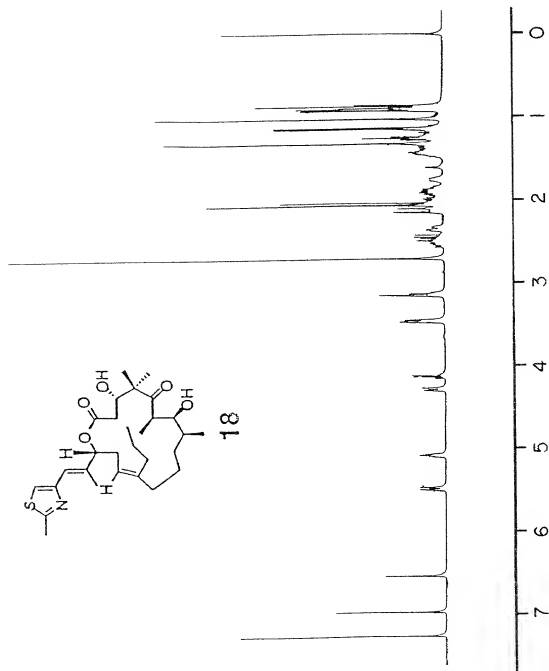


FIG. 30



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FIG. 31

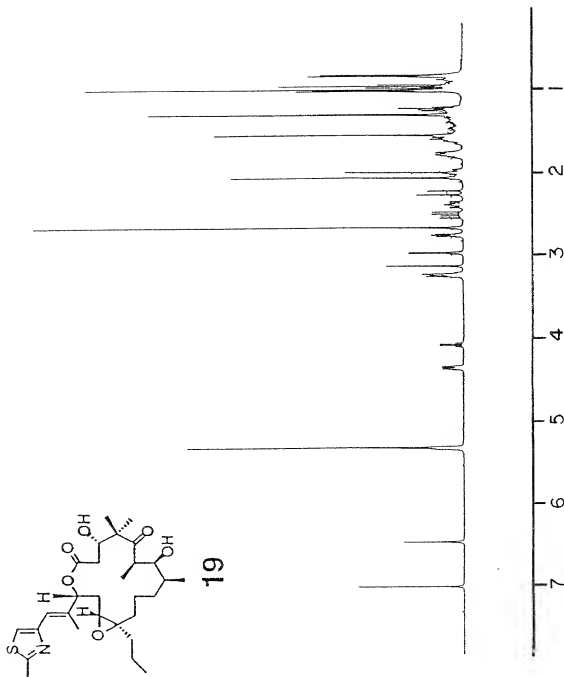
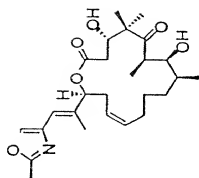


FIG. 32



20

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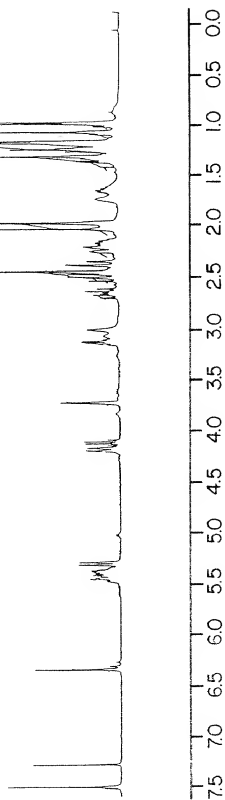
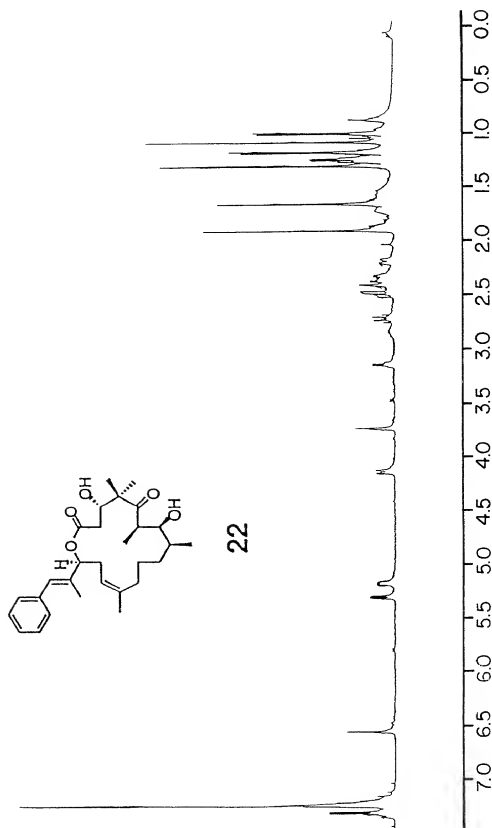


FIG. 33



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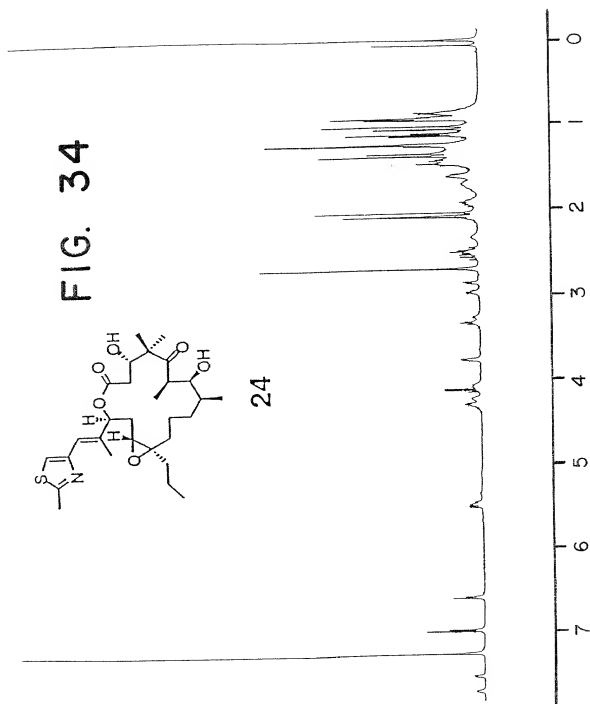
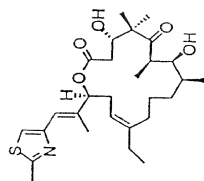
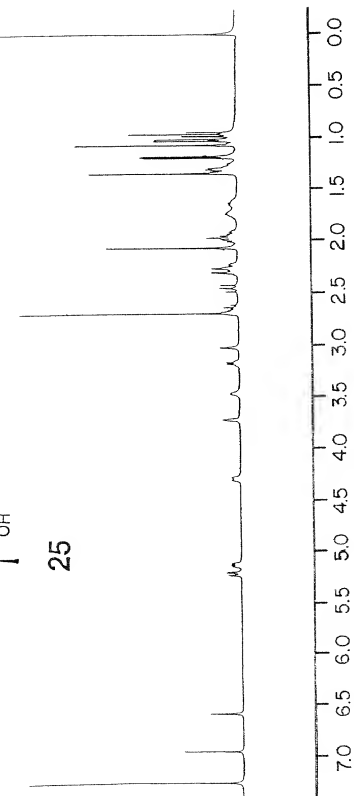


FIG. 35

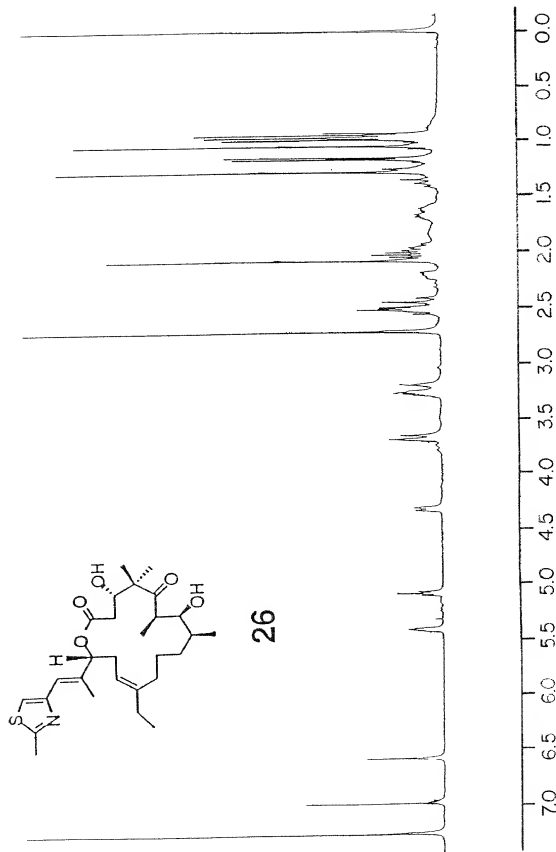


25



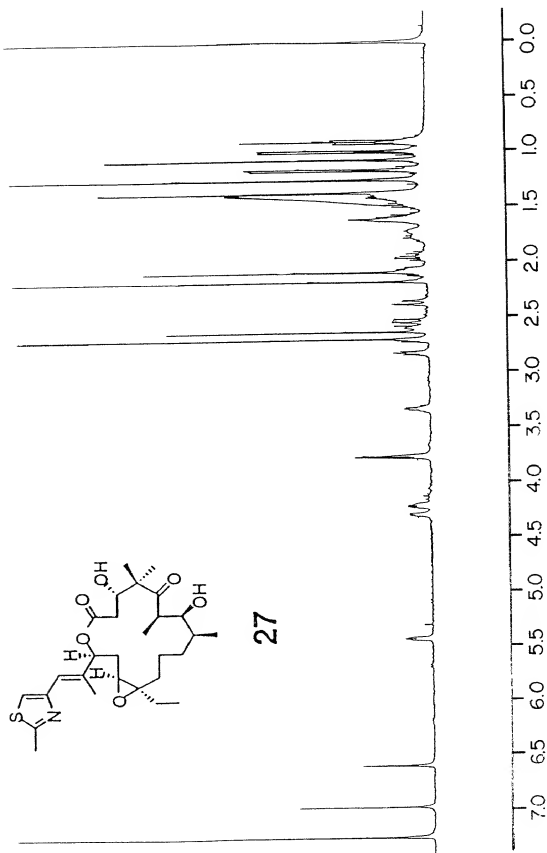
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FIG. 36



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FIG. 37



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FIG. 38

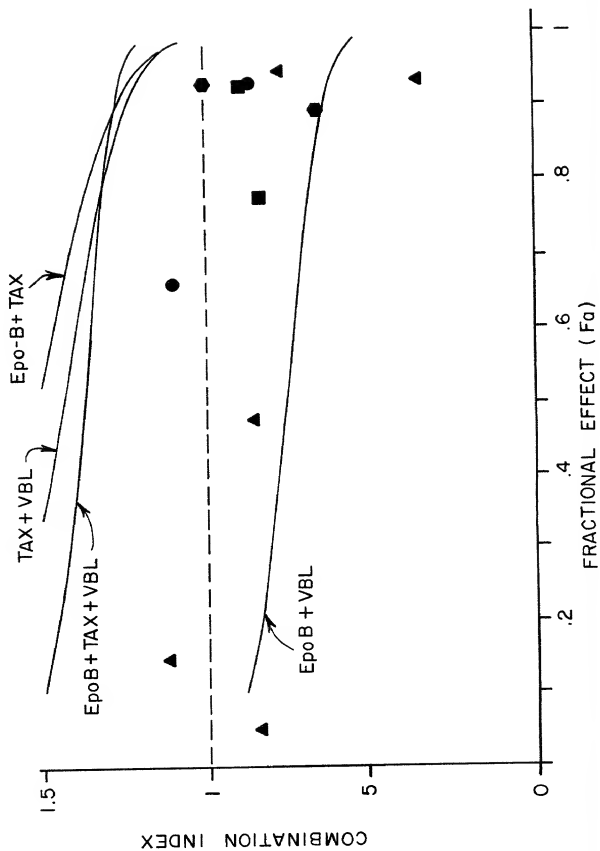
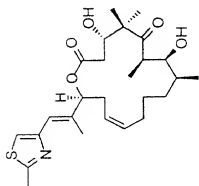


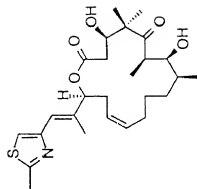
FIG. 39A



desoxyepothilone A

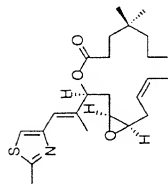
1

(0.022)
[0.012]



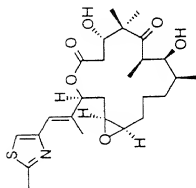
4

(2.12)
[43.0]



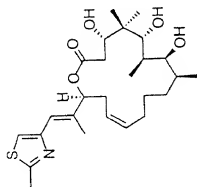
3

(271.1)
[22.4]



epothilone A

(0.0027)
[0.020]

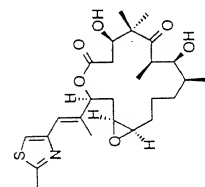


2

(14.23)
[6.28]

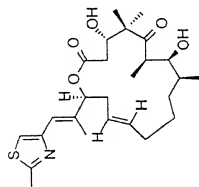
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FIG. 39B



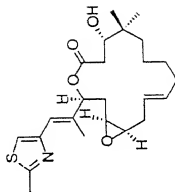
5

(>20)
[35.2]



6

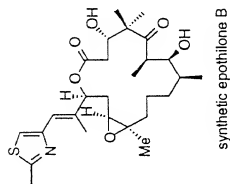
(0.052)
[0.035]



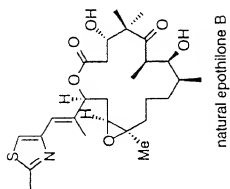
7

(7.36)
[9.82]

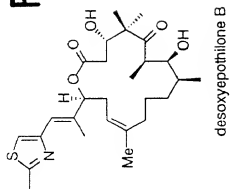
FIG. 40A



8
(0.00044)
[0.0026]



9
(0.00017)
[0.0012]



10
(0.0095)
[0.017]

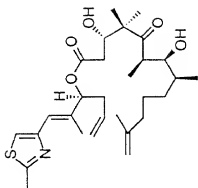
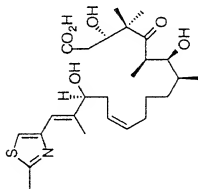
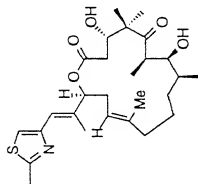
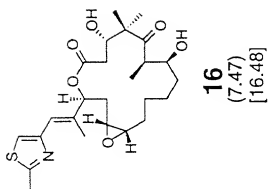
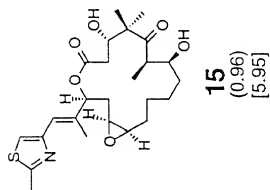
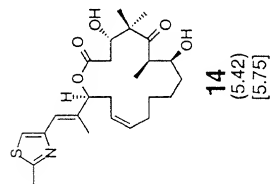
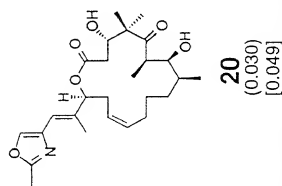
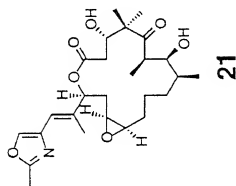
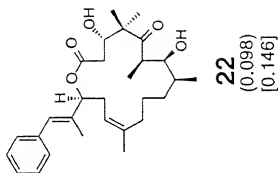
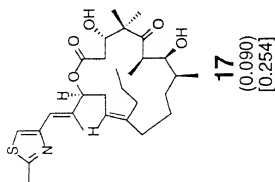
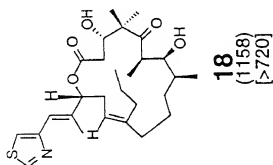
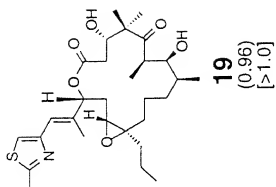


FIG. 40B



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FIG. 41A



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FIG. 41B

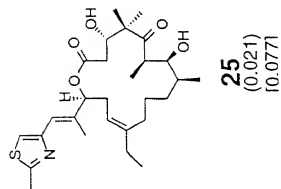
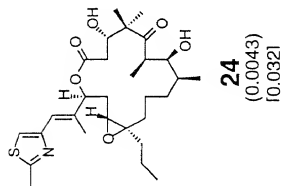
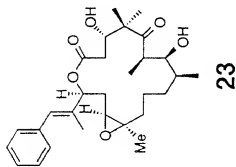
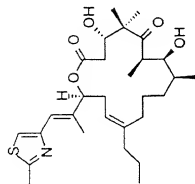
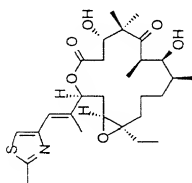


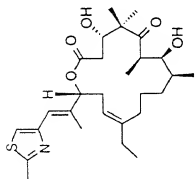
FIG. 42A



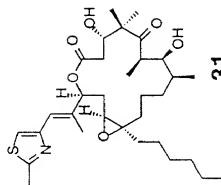
28
(0.039)
[0.067]



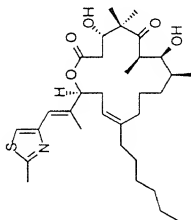
27
(0.0010)
[0.0072]



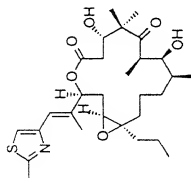
26
(0.055)
[0.197]



31
(0.027)
[0.049]



30
(0.044)
[0.108]



29
(0.0038)
[0.0064]

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FIG. 42 B

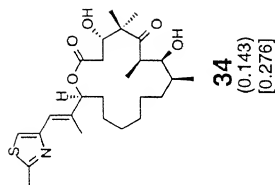
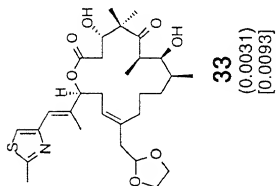
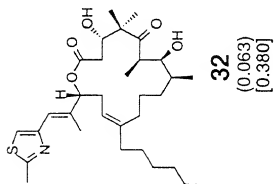


FIG. 42C

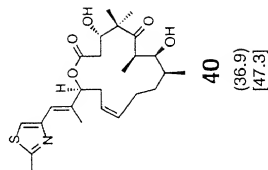
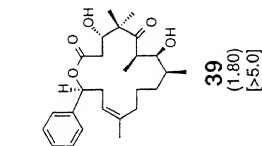
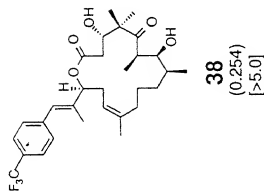
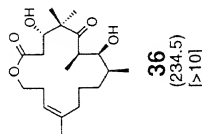
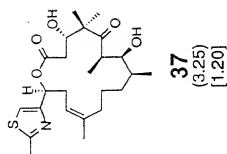
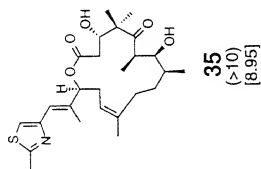
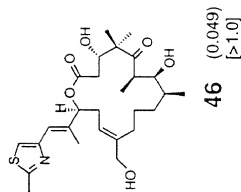
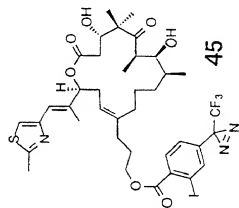
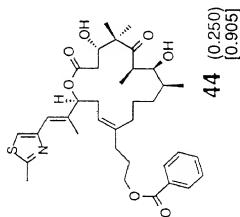
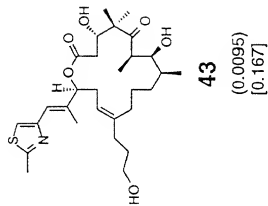
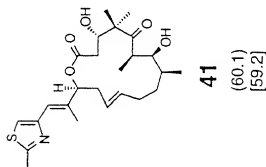
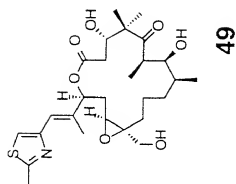
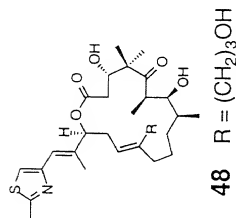
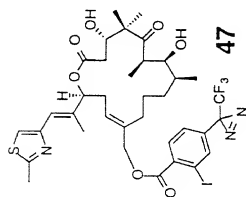


FIG. 42D



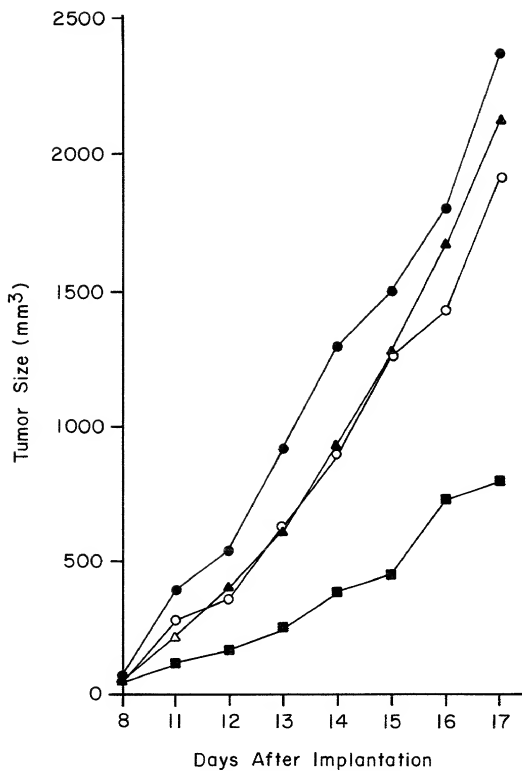
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FIG. 42E



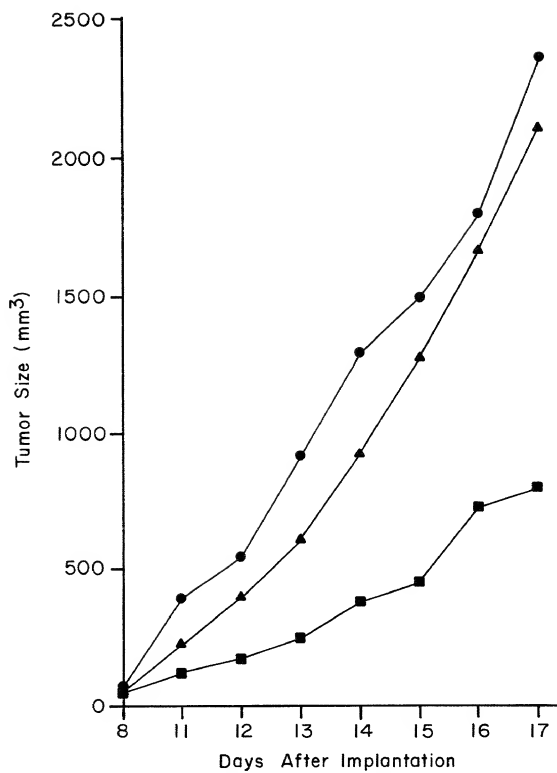
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FIG. 43A



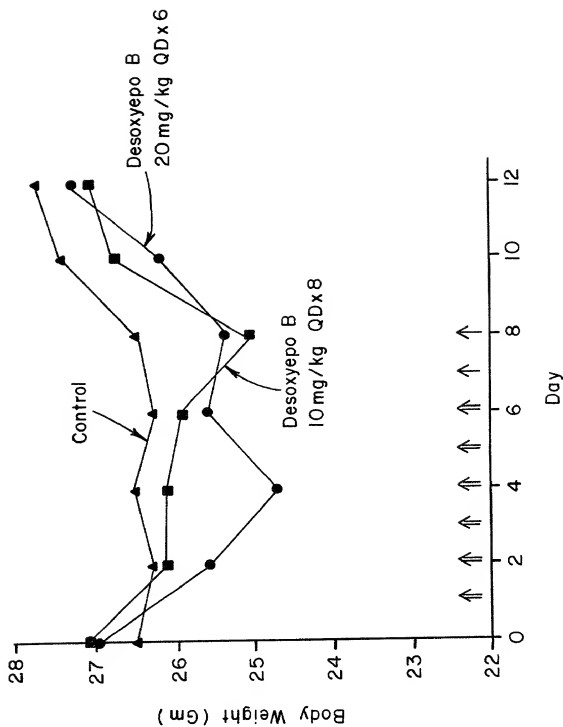
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FIG. 43B



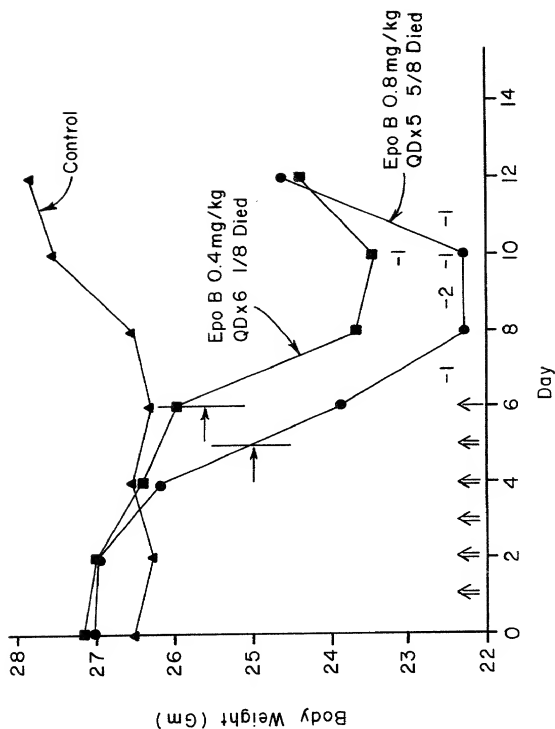
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FIG. 44A



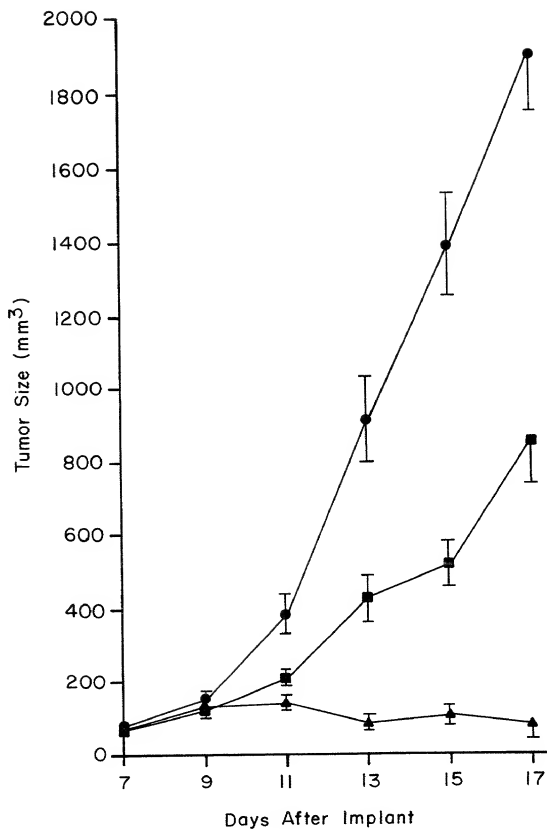
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FIG. 44B



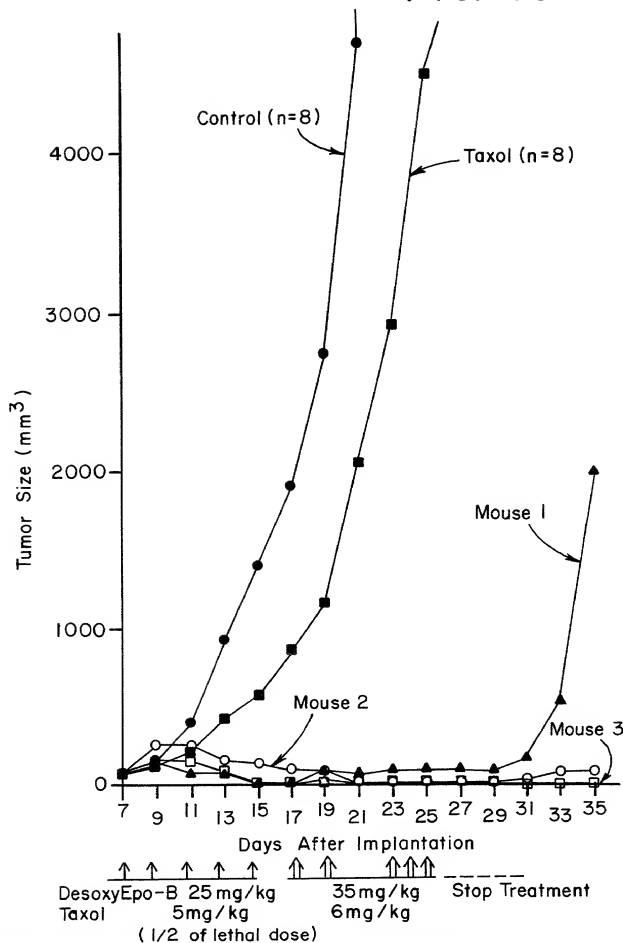
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FIG. 45A



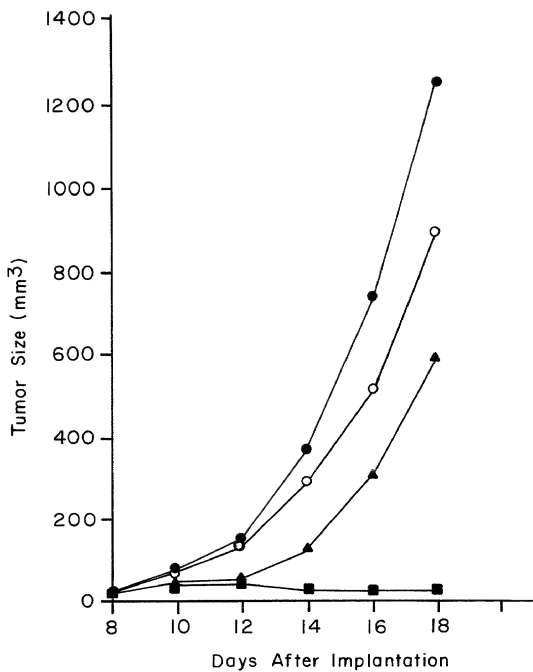
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FIG. 45 B



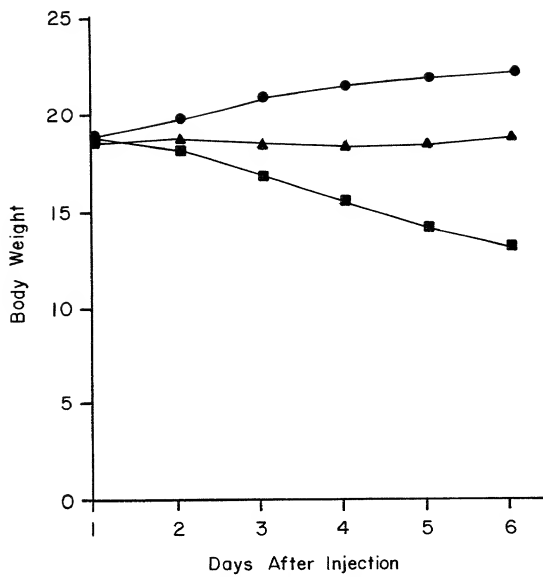
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FIG. 46



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FIG. 47



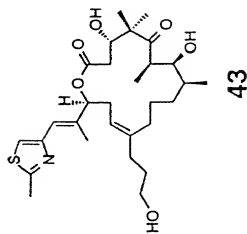
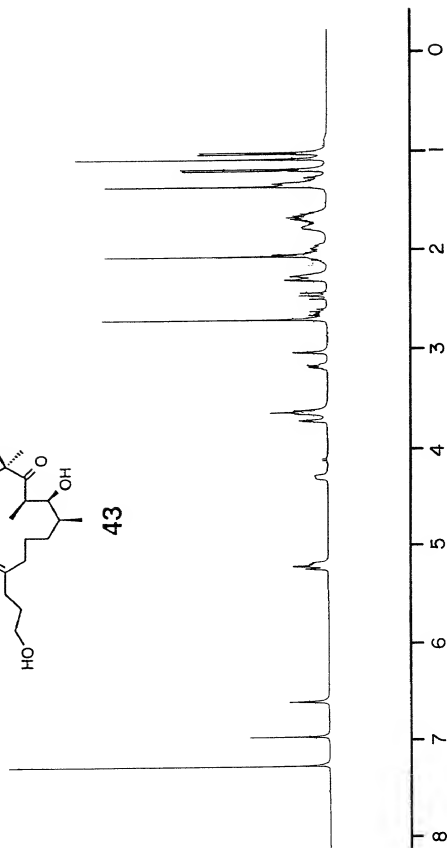
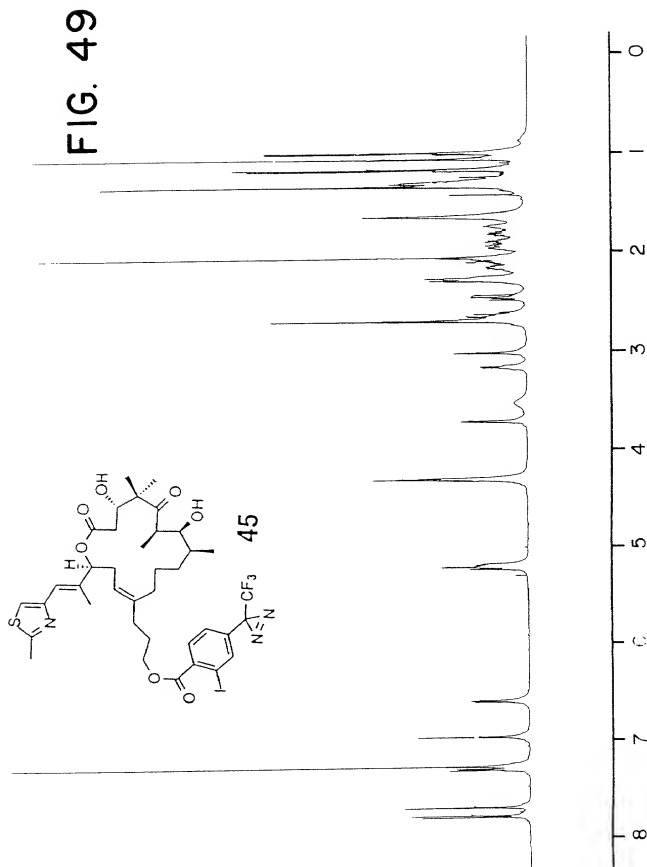
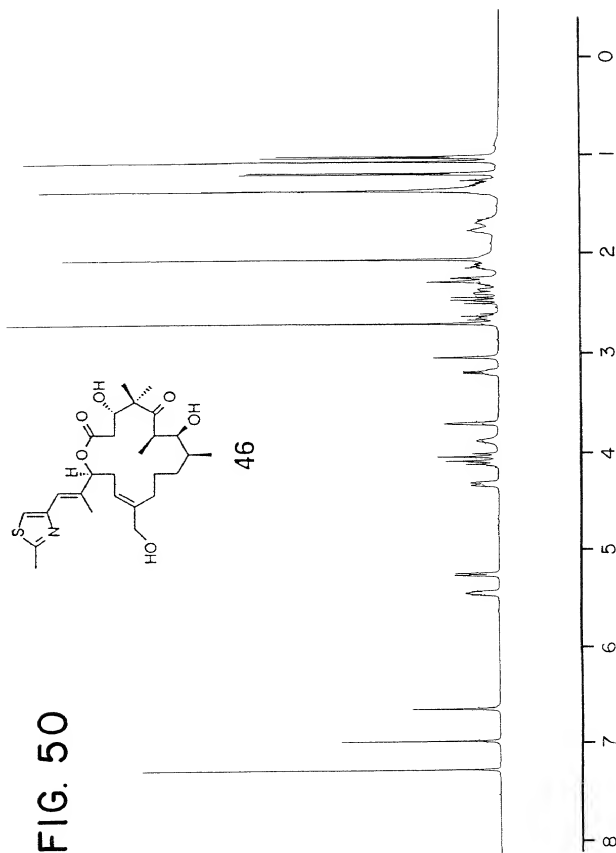


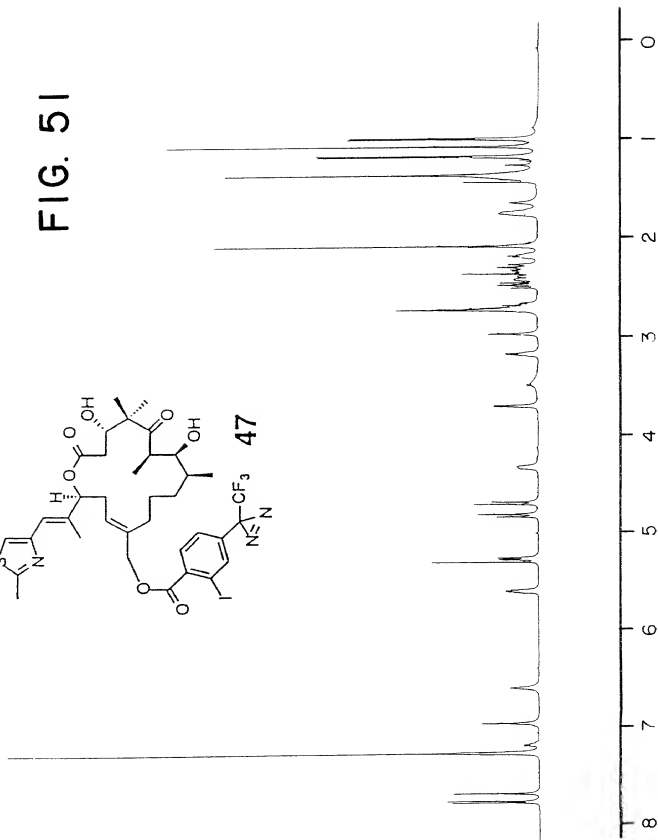
FIG. 48





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Cc1cc(C)nc(C/C=C/[C@H](O)(CC(=O)OC(=O)[C@@H](O)CC[C@H](O)C)[C@H]2C[C@@H](C)[C@H](O)C[C@@H](C)[C@H](O)C2)C1
47

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FIG. 52

